TMDL WASTELOAD ALLOCATION ATTAINMENT PLAN

For Morro Bay and Nipomo Creek Watersheds

Prepared for

County of San Luis Obispo
1055 Monterey Street
San Luis Obispo, CA 93408

SUBMITTED JUNE 2021

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SUBMITTED MAY XX, 2021

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I. Introduction

The California NPDES Phase II Small MS4 General Permit (Permit) (State Water Resources Control Board [State Water Board], 2013) requires Permittees to comply with all applicable Total Maximum Daily Loads (TMDLs), approved pursuant to 40 Code of Federal Regulations Section 130.7, that assign a Wasteload Allocation (WLA) to a Permittee, which are identified in Attachment G of the Permit (excerpts are provided in Appendix A of this plan). The County of San Luis Obispo (County) is required to implement this Wasteload Allocation Attainment Plan (WAAP) to address the TMDLs in its watersheds where the County's Municipal Separate Storm Sewer System (MS4) is identified as a responsible discharger. The TMDLs for which the County is named a responsible discharger are:

- San Luis Obispo Creek:
    - Pathogen TMDL (R3-2004-0142), effective July 25th, 2005. The County prepared and submitted to the Central Coast Water Board the *San Luis Obispo Creek Pathogen Wasteload Allocation Attainment Demonstration* report (County of San Luis Obispo January 25, 2019), which was approved on January 30, 2019. This plan described the County's very limited potential for contribution of fecal indicator bacteria (FIB) from urban sources to the creek[1] and the effective implementation of best management practices (BMPs) by the County's MS4 Stormwater Program in corresponding subwatersheds (i.e., Cuesta Canyon Park).
    - San Luis Obispo Creek Nutrient TMDL (R3-2005-0106), effective August 4, 2006. The Small MS4 Permit Attachment G states that the County of San Luis Obispo and other named municipalities were achieving their allocations at the time the TMDL became effective. The TMDL requires the County to continue implementing BMPs to assure compliance with the TMDL, but does not require a WAAP.
- Morro Bay:
    - Pathogen TMDL (R3-2003-0060), effective November 19, 2003. This TMDL establishes fecal coliform WLAs for the County in Morro Bay; the Bay tributaries: Chorro Creek, and Los Osos Creek.
    - Sediment TMDL (R3-2002-0051), effective December 3, 2003. This TMDL establishes a 50-year implementation period to achieve loading reduction goals (in tons per year of sediment) for the Chorro and Los Osos Creek Watersheds and Morro Bay Estuary, but does not propose direct measurement of loading as a means of achieving the TMDL. Public and private groups are responsible for tracking, assessing (through measurement of four physical monitoring parameters defined in the TMDL and comparison to its targets), and reporting the progress of the management practices intended to reduce sediment loads. The County is responsible for implementing sediment control management practices on County

[1] According to the TMDL Basin Plan Amendment, the County's focus is to be on areas upstream of sampling site 12.5, which only includes a small portion of the San Luis Obispo Creek watershed urban area (Central Coast Water Board, 2004b).

roads and construction areas within the MS4 area.

- Santa Maria River:
    - Fecal Indicator Bacteria TMDL (R3-2012-0002), effective February 21, 2013. The TMDL establishes fecal coliform and *E. coli* WLAs for the County in Nipomo Creek, within the Santa Maria River Watershed.
    - Nutrients TMDL (R3-2013-0013), effective May 22, 2014. The TMDL establishes nitrate as nitrogen and un-ionized ammonia WLAs for the County in Nipomo Creek, within the Santa Maria River Watershed.

The San Luis Obispo Creek TMDL will not be discussed further, since there are no applicable WAAP requirements. This WAAP addresses discharges from County MS4 Permit areas, which are typically urban developed land uses. Agriculture, grazing, and open space land uses are not within the County's jurisdictional control with respect to attaining TMDL WLAs. As a guide to the implementation of activities that will achieve TMDL WLAs, this WAAP addresses:

- Development of an implementation and assessment strategy;
- Source identification and prioritization;
- BMP identification, prioritization, implementation, analysis, and assessment;
- Monitoring and assessment;
- Coordination with stakeholders; and
- Adaptive management.

Implementation of this WAAP and the BMPs described herein is designed to attain the appropriate WLAs (Table 1).

Table 1. Interim Target and WLA Target Dates

Watershed	TMDL Pollutant	Interim Target Date	WLA Target Date
Morro Bay	Fecal Coliform (Pathogen)	Not applicable	11/19/2013
	Sediment	12/3/2028 (50%)[2]	12/3/2053
Nipomo Creek[1]	Fecal Coliform and *E. Coli*	2/21/2018 (20%) and 2/21/2023 (50%)[2]	2/21/2028
	Nitrate as Nitrogen	5/22/2034 (Wet Season)[3]	5/22/2044
	Un-ionized Ammonia as Nitrogen	5/22/2026	5/22/2044

1. Nipomo Creek is the only waterbody in the Santa Maria River Watershed that has WLAs assigned to the County.
2. Values listed in () represent the progress toward the WLA that should be achieved by the listed interim target date.
3. No interim targets are listed for the dry season.

This WAAP addresses the TMDL requirements found in Attachment G of the Permit (State Water Board 2015, applicable excerpts provided in Appendix A). Pursuant to the Small MS4 Permit, the County performed a comprehensive program assessment to improve compliance with the Permit, reduce program redundancy, increase program efficiencies, and protect water quality. These modifications are described in the *Stormwater Program, Program Effectiveness Assessment and Improvement Plan Year 5 Report 2017-2018* (County of San Luis Obispo, 2018). These updated BMPs are reflected in this plan.

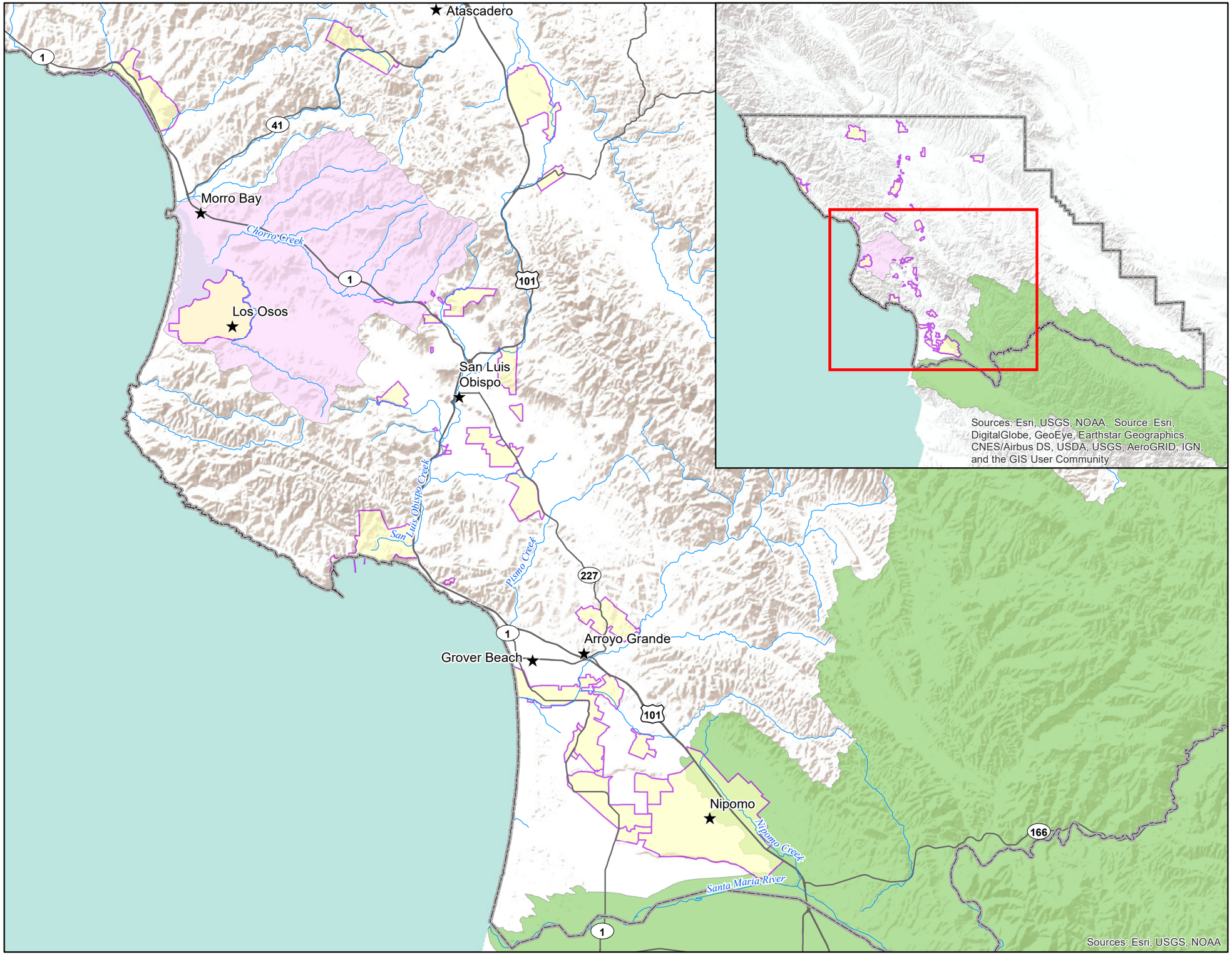
II. Implementation Strategy

The County focuses on pollutant source control through implementation of the MS4 Program, which consists of education and outreach, public involvement and participation, illicit discharge detection and elimination, construction site runoff control, post-construction runoff controls, and pollution prevention / good housekeeping programs (provisions E.7 through E.12 of the Permit). The County coordinates efforts with other municipalities, agencies, non-profit organizations, the general public, etc. to achieve BMP implementation and gage BMP effectiveness. The County's Stormwater Management Program seeks to coordinate stormwater runoff pollution prevention efforts throughout the MS4 jurisdiction by implementing effective BMPs, improving underperforming BMPs, and discontinuing ineffective BMPs to achieve the objectives of the Permit. The County's Permit compliance strategy consists of a balanced approach of implementing and assessing source control BMPs and leveraging existing practices to the maximum extent practicable (MEP). Through adaptive management, BMPs will continue to be assessed annually and modified on a five-year basis to better target TMDL pollutants specific to the watersheds addressed in this WAAP. The results of water quality monitoring will be used to further assess the performance of implemented BMPs. BMP modifications may be made based on monitoring results.

III. Source Identification and Prioritization

For each TMDL, sources of applicable pollutants of concern were identified through review of the TMDL project reports, existing data, and in-field assessments performed by Geosyntec and the County in 2012. These evaluations targeted the leading causes, magnitudes, and locations of respective pollutant loadings. Data considered included water quality, flow, land use, and other information. Relative pollutant source loads and best professional judgment were then used to prioritize the sources based on relative contribution to the receiving water impairment and anticipated controllability. A summary of each TMDL source evaluation is provided below, including discussion that is more focused on County MS4 sources specifically. Additional source evaluation details can be found in the TMDL staff reports or the referenced studies.

A map of the County unincorporated coverage areas (per the Permit) is shown in Figure 1. Specific land uses under the County's jurisdiction are shown for Morro Bay Watershed (Figure 2 and Figure 3) and Nipomo Creek Watershed (Figure 4). Within the Morro Bay Watershed, the County has jurisdiction in the lower watershed consisting of area within the community of Los Osos- Baywood Park (Figure 3) and in the upper watershed consisting of the County's facilities on Oklahoma and Kansas Avenues and two very small rural residential areas. Within the Nipomo Creek Watershed, the County has jurisdiction within the community of Nipomo. The County MS4's relative pollutant load contribution within each watershed is minimal compared to other sources (e.g., stormwater discharges from open spaces, irrigated agriculture, ranching, and other MS4s).



Legend

- County Boundary
- County MS4 Area
- Morro Bay Watershed
- Santa Maria River Watershed
- Streams
- Major Highways

N

0 2.5 5 10 Miles

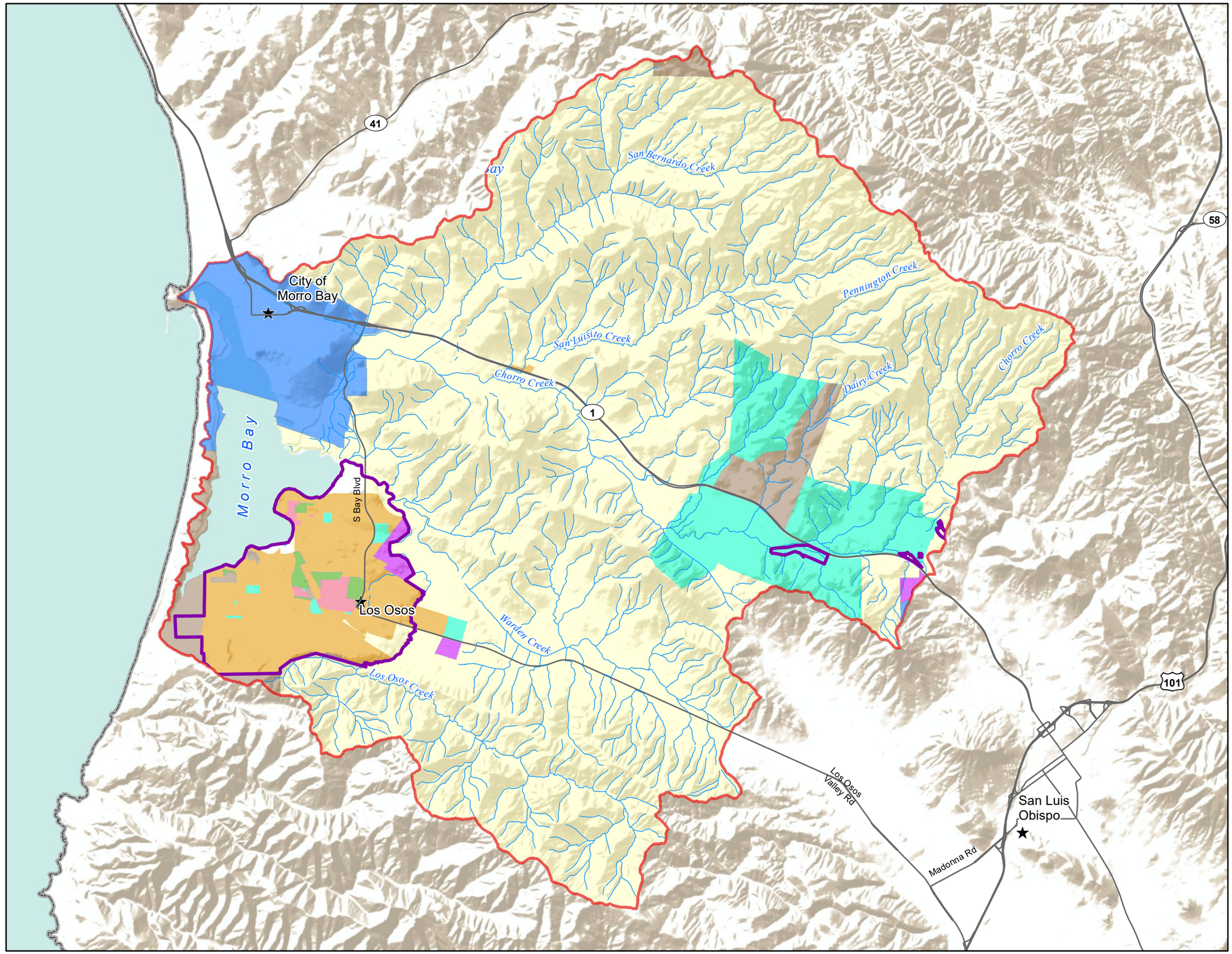
County of San Luis Obispo

MS4 Area & Watersheds of Applicable TMDL Waterbodies

TMDL Wasteload Allocation
Attainment Plan

TETRA TECH
3201 Airpark Drive, Suite 108
Santa Maria, CA 93455

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
39577	7/16/2019	Sanford	1070	1



Legend

- Steams
- Major Roads and Highways
- County MS4
- County Boundary
- Morro Bay Watershed Boundary
- City of Morro Bay

Land Use Type

Includes non-County lands (state and federal)

- Unincorporated
- Commercial
- Public Facilities
- Recreation
- Multi-Family Residential
- Rural Residential
- Single-Family Residential

N

0 0.75 1.5 3 Miles

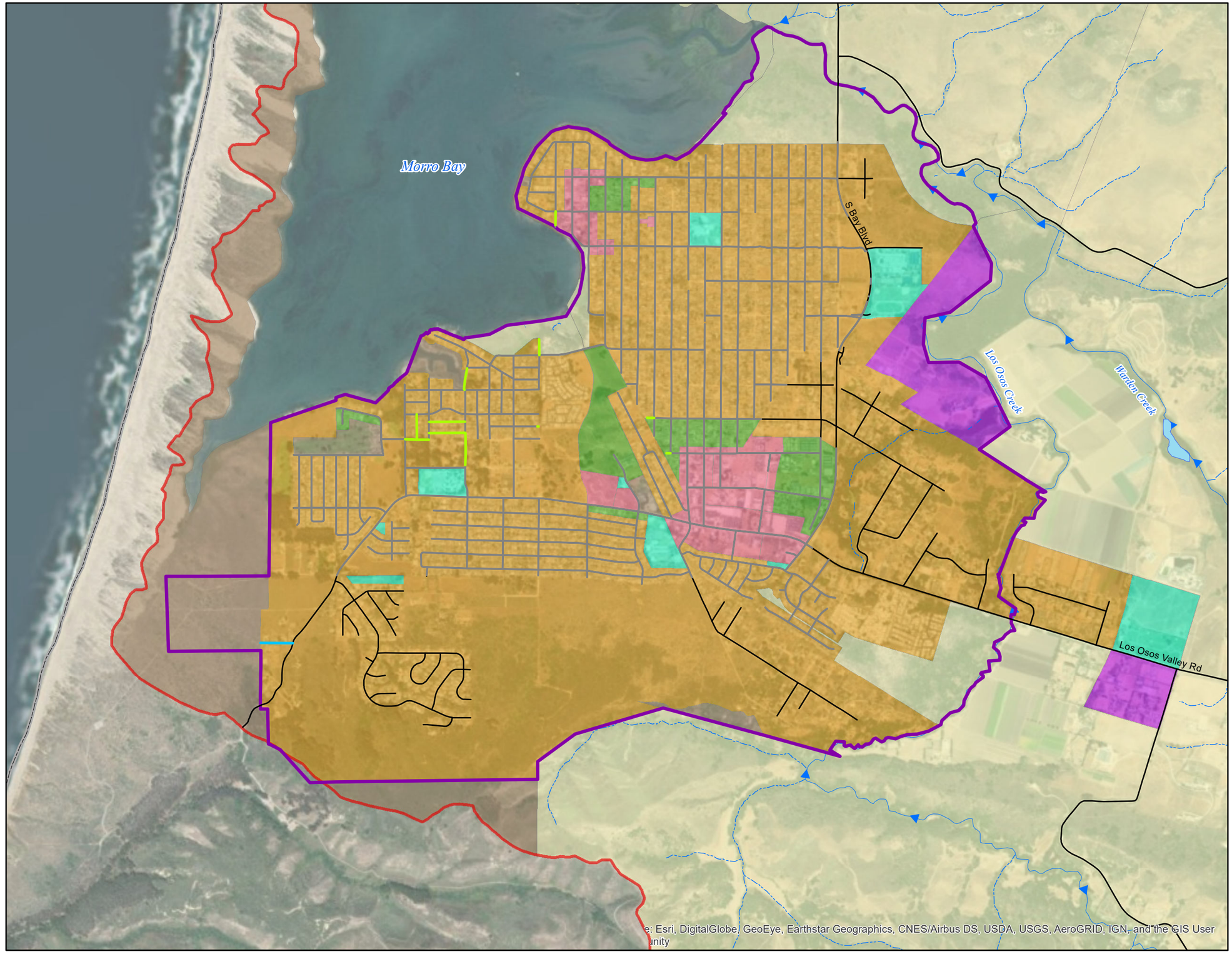
County of San Luis Obispo

Land use within the Morro Bay Watershed

TMDL Wasteload Allocation Attainment Plan

TETRA TECH
3201 Airpark Drive, Suite 108
Santa Maria, CA 93455

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
39577	7/16/2019	Sanford	1071	3



Legend

- County MS4 Area
- County Boundary
- Morro Bay Watershed Boundary
- City of Morro Bay

Roads

- County Maintained Paved Road
- County Maintained Gravel Road
- CSD Maintained Gravel Road
- CSD Maintained Paved Road

Stream Type

- Intermittent
- Perennial

Land Use Type

Includes non-County lands (state)

- Undeveloped/Unincorporated
- Commercial
- Public Facilities
- Recreation
- Multi-Family Residential
- Rural Residential
- Single-Family Residential

N

0 0.25 0.5 1 Miles

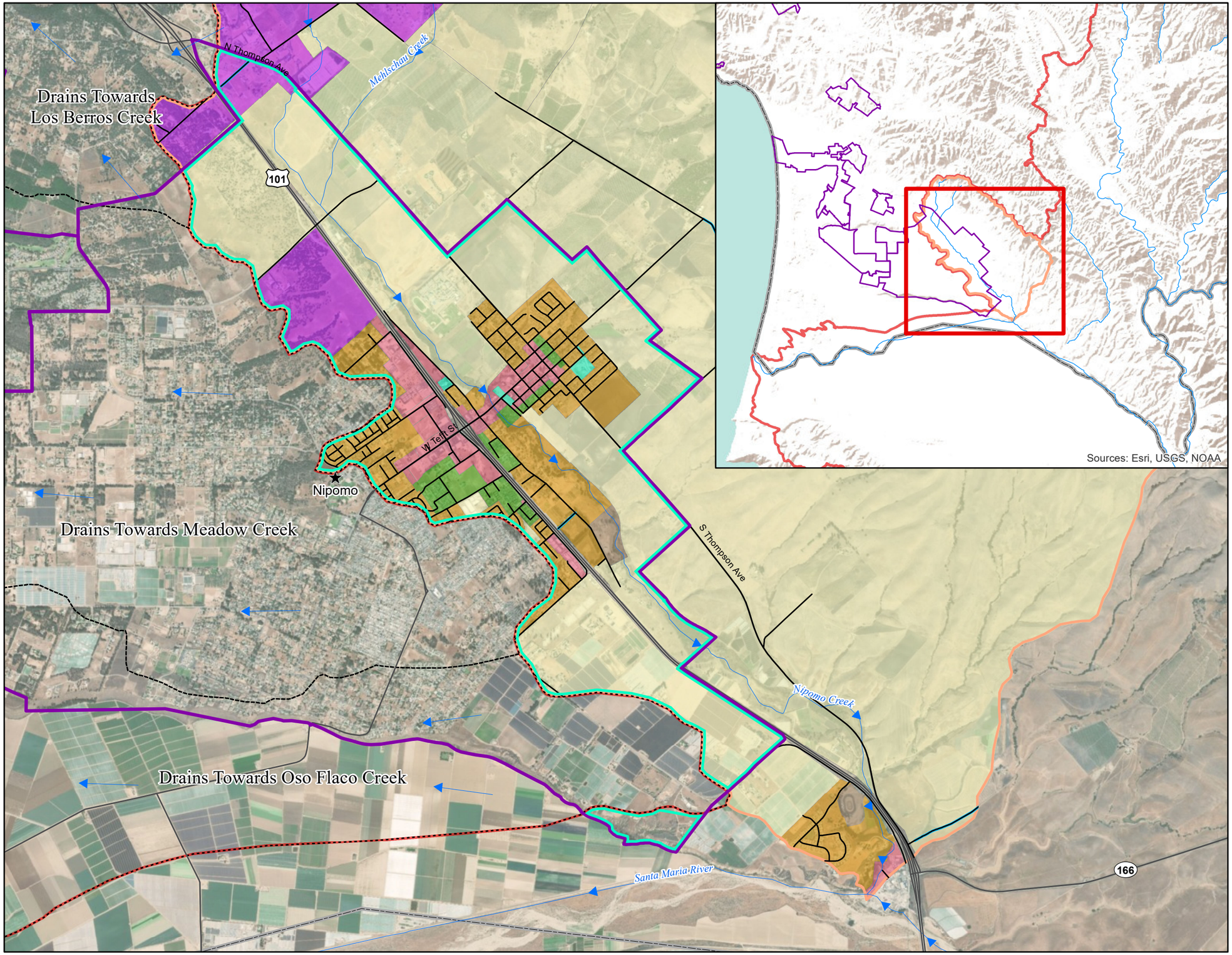
County of San Luis Obispo

Land Use within Los Osos-Baywood Park

TMDL Wasteload Allocation
Attainment Plan

TETRA TECH
3201 Airpark Drive, Suite 108
Santa Maria, CA 93455

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
39577	7/16/2019	Sanford	1072	3



Legend

- County MS4 Area
- Applicable WAAP Area
- County Boundary
- Adjacent Watershed Boundaries
- Nipomo Creek Subwatershed
- Santa Maria River Watershed

Roads

- Highways
- County Maintained Paved Road
- County Maintained Gravel Road

Land Use Type

- Undeveloped; White Hole
- Commercial
- Public Facilities
- Recreation
- Multi-Family Residential
- Rural Residential
- Single-Family Residential

N

0 0.5 1 2

Miles

County of San Luis Obispo

Land Use within Nipomo Creek Subwatershed

TMDL Wasteload Allocation
Attainment Plan

TETRA TECH
3201 Airpark Drive, Suite 108
Santa Maria, CA 93455

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
39577	7/16/2019	Sanford	1073	4

A. Morro Bay Pathogen TMDL

Ten years of fecal coliform data were collected through the National Monitoring Program (1993-2001) and by California Polytechnic State University of San Luis Obispo (Kitts et al., 2002). Results indicated portions of Chorro Creek and Los Osos Creek had fecal coliform concentrations above the single sample body contact recreation (REC-1) objective of 400 MPN/100 mL (most probable number per 100 milliliters) at least half the time, with higher concentrations observed during wet-weather. Morro Bay fecal coliform values were found to regularly exceed the monthly geometric mean shellfish harvesting (SHELL) objective of 14 MPN/100 mL. However, analyses by the Southern California Coastal Water Research Project (SCCWRP, 2009) have shown that frequent SHELL objective exceedances are not uncommon for coastal waters throughout California, even at reference beach sites at the outlet of undisturbed watersheds.

Although the TMDL source assessment does acknowledge the significance of natural sources of indicator bacteria consistent with findings from other recent reference watershed studies (SCCWRP, 2008), the TMDL WLAs do not account for natural sources in the form of allowed exceedance days (or concentrations/loads above the REC-1 water quality objective) that are based on background contributions. Additional data from *Identifying the Sources of Escherichia coli Contamination to the Shellfish Growing Areas of the Morro Bay Estuary* (DNA Study, Kitts, *et al*, 2002), the *2002-2011 Data Summary* from the Morro Bay National Estuary Program (MBNEP), and the 2012 in-field observations provide further insight into possible controllable sources within the County's jurisdiction.

TMDL-IDENTIFIED SOURCES

Per the TMDL Project Report (Central Coast Water Board 2002), the pathways by which bacteria flows to Morro Bay are via tributary creeks, groundwater seeps, and direct and indirect stormwater and non-stormwater discharges. The study performed by California Polytechnic State University and the University of Washington DNA Study (TMDL DNA Study, Kitts, *et al*, 2002), found the largest sources of *E. coli* were related to the following biomarker categories: birds (22%), humans (17%), bovine (14%) and dogs (9%) (Kitts et al., 2002). The study identified a number of potential sources that don't apply to the County's MS4 (i.e., runoff from urban land uses), such as rangeland and grazing operations, inadequate waste disposal from boats in the bay, bird and wild animal waste, and failing or overloaded septic systems. Additionally, the TMDL's DNA Study (Kitts, et al., 2002), as well as the MBNEP *Data Summary* completed in 2012, found that under normal operating conditions and when in compliance with existing permits, wastewater treatment plants do not appear to contribute to elevated bacteria levels. The TMDL-identified potential sources that relate to the County's MS4 areas are:

- *Homeless Encampments*. The TMDL's DNA Study (Kitts, *et al*, 2002) found that humans were the second largest contributor of *E. coli* of the biomarkers studied (17%). Based on visual observation of homeless encampments in the Watershed and the lack of facilities for disposing of human waste in these areas, homeless encampments are a possible source of fecal material entering the creeks and subsequently Morro Bay, per the TMDL's DNA Study (Kitts, *et al*, 2002).
- *Domestic Animals*. Stormwater and non-stormwater (such as irrigation runoff) that comes into contact with dog, cat, and other domesticated animal (pets and feral) waste can transport pathogens to the MS4 and water bodies. Dogs and cats were found to contribute to *E. coli* in the Watershed, albeit, on a smaller scale – dogs contributed 9% and cats about 3% of the biomarkers studied.
- *Urban stormwater runoff*. Stormwater runoff from the community of Los Osos was identified as a

bacterial source.

- *Groundwater seeps in Los Osos along the sandy beach shoreline west of 3rd Street*. Historic sampling from the seeps indicated concentrations of fecal coliform that were almost always above REC-1 objectives during periods of both wet- and dry-weather conditions (Cal Poly, 2002). However, this sampling and the TMDL's DNA Study was performed prior to the construction of the Los Osos Water Recycling Facility (LOWRF). The human-related contribution of bacteria to Morro Bay from the seeps is currently unknown.

The TMDL identified leaking and/or failing on-site wastewater treatment systems (OWTS) as a bacterial source and acknowledged the possible relationship to these and the presence of bacteria in the groundwater seeps. However, since the TMDL was adopted and the 2016 version of this WAAP was developed, construction of the LOWRF has been completed. Individual properties within the community of Los Osos that historically discharged to an OWTS are now connected to the LOWRF; thereby eliminating any new bacteria loading to underlying groundwater. As stated above, the TMDL's DNA Study (Kitts, et al, 2002) and the MBNEP Data Summary (2012) found that under normal operating conditions and when in compliance with existing permits, wastewater treatment plants do not appear to contribute to elevated bacteria levels. TMDL WLAs assigned to the County for pathogens in Morro Bay are shown in Table 2.

Table 2. Morro Bay Pathogen TMDL WLAs

	Wasteload Allocation (MPN/100 mL)	
Waterbody	**Fecal Coliform Geometric Mean[1,2]**	**Fecal Coliform Single Samples, No More than 10% of Samples Shall Exceed[1]**
Chorro and Los Osos Creeks [3]	200	**400**
Morro Bay	14	**43**

Notes:
1 *E. coli* may be used as a surrogate for fecal coliform.
2 Based on not less than five samples over a period of 30 days.
3 The Basin Plan (2019) includes freshwater seeps, but Permit Attachment G (Appendix A) does not.

OTHER IDENTIFIED SOURCES

Earlier versions of this WAAP concluded other potential MS4 sources of fecal coliform in the Morro Bay Watershed are:

- Horse manure from stables in Los Osos along Solano Street and Butte Drive and trails adjacent to the Bay that are used by equestrians.
- The San Luis Obispo Animal Services facility and the County Sheriff's Honor Farm, located on Oklahoma Avenue east of the Maintenance Department Yard on Kansas Avenue; however, the contribution of pathogens from these areas is likely very low. The County is currently constructing a new Animal Services Facility that will have state-of-the-art cleaning, plumbing, and mechanical systems, as well as post-construction runoff controls that protect water quality and limit increases in project-related runoff. The County also implements various effective BMPs, such as animal waste management training for volunteers (i.e., dog walkers from the Animal Services Facility).

Outdoor areas of the Honor Farm consist of the Garden Project (i.e., small-scale organic farm) and enclosed outdoor activity areas for inmates. The facility is very well-maintained. All new workers receive stormwater awareness training and take a quiz to test their retained knowledge.

- Los Osos-Baywood Park minor storm drain facilities, i.e., catch basins and some small detention basins. During the 2012 in-field assessment, trace dry-weather runoff was observed at a few locations, although no measurable flows were observed entering any storm drain catch basins. This implies that over-irrigation is not a significant source of dry-weather flows within the community. But many catch basins observed had sediment, decaying organic matter, and/or biofilm present.
- Discharges from two pipes near 3rd Street and El Morro Avenue to Morro Bay. These discharge locations are adjacent to MBNEP's BAY sampling site. During the 2012 in-field assessment, one observed pipe was steadily flowing at a rate of approximately 0.5 to 1 gallon per minute (gpm); the second pipe was producing a steady trickle. The presence of dry weather flows suggests that groundwater inflow/infiltration or illicit connections may be present within this network of the Los Osos MS4.

Additionally, sanitary sewer overflows from the LOWRF collection system or plant are possible. Pollutant sources within the major commercial area of Los Osos, along Los Osos Valley Road between 9th Street and South Bay Blvd. have not been observed.

SOURCE ASSESSMENT CONCLUSIONS

The primary pollutant-contributing sources in this Watershed include agriculture and rangeland runoff; sanitary sewer overflows from the California Men's Colony wastewater collection system and treatment plant; and natural sources such as birds, wildlife, and marine mammals, which are not under the County's MS4 jurisdiction and/or are not anthropogenic-caused. Though wet-weather data are limited, results from MBNEP's outfall monitoring program (MBNEP, 2007) suggest that MS4 discharges from urbanized areas with land uses similar to the Los Osos-Baywood Park community could contribute bacteria at concentrations above the TMDL numeric targets, although many other significant sources of bacteria are present in the Watershed (e.g., groundwater seeps and cattle ranching), which makes it difficult to determine the relative magnitude of MS4 discharges. Now that applicable properties within the community of Los Osos have been connected to the LOWRF, the County will prioritize BMPs that address controlling domestic animal waste, urban runoff, and illicit discharges within its jurisdiction.

B. Morro Bay Sediment TMDL

In 1998, Chorro Creek, Los Osos Creek, and the Morro Bay Estuary were listed as impaired by anthropogenic sediment loading and thus, the Sediment TMDL was adopted in 2003. The TMDL was based largely on the *Morro Bay Sediment Loading Study* (Tetra Tech, 1998). The study estimated that the Morro Bay Watershed delivers an average of approximately 70,000 tons per year of sediment into the Morro Bay Estuary and stated that the Chorro Creek sub-watershed contributes the majority of this. The TMDL Attachment A states, "Virtually all sediment loading comes from non-point sources, although there is minor contribution from other land uses subject to regulation under NPDES stormwater permits…" The TMDL identified the contributing land uses to be range land, brush land, woodland, cropland, and urban– due to grazing, row crop, and land development activities (e.g., roads and construction). Since 1989, extensive monitoring and characterization has been performed by the MBNEP and the Central Coast Water Board, which are responsible for the majority of monitoring for this TMDL. As discussed within the

Sediment Monitoring Report (MBNEP, 2016), the MBNEP has found that:

- Large storms contribute the bulk of the sediment loading;
- Dry weather conditions rarely contribute to exceedance of turbidity water quality objectives;
- Using newer characterization protocols, only moderate impairment was indicated at three monitoring sites and no impairment at two sites; and
- Comprehensive analysis of historic data revealed a highly variable hydrologic record, which correlated with the observed annual sediment loads.

The TMDL staff report (Central Coast Regional Water Board 2012) describes the vast majority of sediment loading in the watersheds to derive from non-point sources. County MS4 sources, such as roads, contribute sediment to a lesser degree. Therefore, the County will prioritize road maintenance and construction BMPs for addressing these sources. TMDL WLAs assigned to the County for sediment in Morro Bay are shown in Table 3.

Table 3. Morro Bay Sediment TMDL WLAs

	Wasteload Allocation	
Waterbody	**Sediment (tons/year)**	**% Reduction[1]**
Morro Bay	5,137[2]	Interim: 50% by 12/3/2028 Final: 100% by 12/3/2053
Notes: 1 Compared to 2003 baseline. 2 Assigned to "roads" erosion category (*TMDL Project Report*, Table 23, *Load Allocations for Four Erosion Categories in Morro Bay Watershed*).		

C. Santa Maria River Bacteria TMDL

The County is only responsible for reducing FIB from contributing land uses to Nipomo Creek. The concentration-based WLAs assigned to the County for Nipomo Creek are summarized in Table 4. The fecal coliform bacteria WLAs are based on the objectives for the beneficial use of water contact recreation found in the Water Quality Control Plan for the Central Coast Basin (Basin Plan), while *E. coli* WLAs are based on the USEPA recommended criteria.

Table 4. Nipomo Creek Bacteria TMDL WLAs[1]

	Fecal coliform (MPN/100mL)		***E. coli* (MPN/100mL)**	
Waterbody	**Log Mean[2]**	**Not more than 10% of Samples[2]**	**Geometric Mean[2]**	**Single Sample**
Nipomo Creek	200	400	126	409
Notes: 1 Final compliance within 15 years of TMDL approval (2/21/2028). Interim targets are 20% progress within 5 years of approval (2/21/2018) and 50% within 10 years (2/21/2023). Alternative interim targets are proposed within this WAAP (Section VII). 2 Calculated from not less than five samples equally spaced over a 30-day period.				

TMDL-IDENTIFIED SOURCES

The TMDL identified the following sources of fecal coliform bacteria in the Nipomo Creek Watershed, with each source's estimated relative percentage contribution in parentheses: urban stormwater (16%), domestic animal runoff (29%), background runoff (2%), in-stream domestic animals (38%), and in-stream wildlife (15%) (Central Coast Water Board 2012). Wastewater collection systems and OWTS were identified as sources in other areas of the Santa Maria River Watershed, but were not identified as (or observed to be, based on field inspections) contributors in the Nipomo Creek Watershed.

OTHER IDENTIFIED SOURCES

Earlier versions of this WAAP included a literature review that concluded other potential MS4 sources of fecal coliform in the Nipomo Creek Watershed could include leachate from dumpsters, illegal connections, untreated sewage from spills, wastewater discharges from recreational vehicles, encampments, reclaimed water and biofilms/regrowth in MS4 infrastructure (uncontrollable source). This conclusion was based on two studies (Pitt et al., 2004 and Weston, 2009).

SOURCE ASSESSMENT CONCLUSIONS

Controllable sources of bacteria from urban runoff that are targeted by the County in this WAAP include:

- Human waste.
- Domestic animal waste.
- Dry weather flows, which may be mobilizing bacteria.

This WAAP will enhance and focus existing Permit and other regulatory requirements to better target sources in the Nipomo Creek Watershed.

D. Santa Maria River Nutrient TMDL

The concentration-based WLAs assigned to the County for nutrients in Nipomo Creek are summarized in Table 5. The WLA for nitrate is based on the Basin Plan's numeric WQOs for protection of drinking water (MUN) and groundwater recharge (GWR). The WLA for un-ionized ammonia is based on the Basin Plan's numeric WQO to protect against toxicity in surface waters.

Table 5. Nipomo Creek Nutrient TMDL WLAs[1]

Waterbody	Nitrate as N (mg/L)	Un-ionized Ammonia as N (mg/L)
Nipomo Creek	10	0.025

Notes:
1 Final compliance within 30 years of TMDL approval (5/22/2044). Interim targets are to achieve the WLA within 12 years of the effective date (5/22/2026).

TMDL-IDENTIFIED SOURCES

Source analysis completed as part of the TMDL (Central Coast Water Board 2013) estimated that 96% of the nitrogen inputs to the lower Santa Maria River were from croplands, grazing lands, and groundwater.

The TMDL estimated that croplands (7,620 acres) and grazing lands (4,674 acres) make up 92% of the Nipomo Creek Watershed area, and forested and undeveloped land makes up 4%. Therefore, the vast majority of nitrogen sources were from non-urban sources and the contributing area is primarily non-urban. Urban sources of nitrogen to the lower Santa Maria River were estimated to be 3% and urban areas (578 acres) account for only 4% of the Watershed (Central Coast Water Board 2013). Specific sources of nutrients were not identified for the Nipomo Creek Watershed in the TMDL. However, data analyzed for the Central Coast Region show that nitrate concentrations in urban runoff rarely exceed the 10 mg/L nitrate as nitrogen water quality objective (Central Coast Water Board 2013). Therefore, based on these estimations, it can be surmised that the nitrogen contributions from the County's MS4 area (i.e., urban land use within the Nipomo Creek Watershed) to the Santa Maria River are extremely low.

OTHER IDENTIFIED SOURCES

Earlier versions of this WAAP included a literature review that found a citing that concluded leaf litter, atmospheric deposition, fertilizers and (to a lesser extent) pet waste are all potential sources of nutrients in stormwater (Olson *et al*., 2017). Geosyntec's prior in-field assessment determined that in general, MS4 sources of nitrogen are generally from residential areas and may consist of fertilizers, green waste, trash, and pet waste.

SOURCE ASSESSMENT CONCLUSIONS

Controllable sources of nutrients that are targeted by the County in this WAAP include: domestic animal waste, nurseries (compost, potting materials, fertilizers, etc.), organic debris and trash accumulation within the MS4 (gutters, drop inlets), sediment accumulation on roads (assuming this could be a carrier of nutrients), and residential irrigation runoff. Monitoring data collected by the Central Coast Water Board through the Central Coast Ambient Monitoring Program (CCAMP) for Nipomo Creek monitoring locations downstream of the County's MS4 Permit area show that geometric means for nitrate and un-ionized ammonia in the receiving waters are below WLAs and that these pollutants are not expected to be above WLAs in MS4 discharges based on Southern California studies of typical urban stormwater (Robinson, 2005 and Stein, 2007).

IV. BMP Identification

The BMPs described in this WAAP are part of the County's broader efforts to meet the requirements of the Permit. The proposed BMPs were selected because they are specific to the needs of the communities in the County, they protect and improve water quality, they are feasible based on the County's resources, and they are flexible to allow for continuous improvement over the course of the Permit term. Implementation of these BMPs requires the County expend resources and staff time. Where possible, the County will take advantage of existing water quality activities related to stormwater, particularly by partnering with community volunteer groups, County departments, and a coalition of other agencies to implement BMPs. By building upon the combined effects of these activities, the County will be able to implement these practices more effectively and efficiently.

Implementing BMPs to reduce stormwater pollutants in receiving waters to the maximum extent practical is a requirement of the TMDLs. The County has been continuously implementing Permit-required BMPs and additional BMPs that address the TMDL pollutants. Water quality monitoring data collected since

2016 has been assessed per the Permit Attachment G requirements (Appendix A), but at this time, the data is insufficient to make conclusions about the effect of the implemented BMPs on the targeted constituents within the applicable Watersheds. The Permit-required BMPs will continue to be implemented and assessed for their reduction on TMDL pollutants from MS4 sources.

It should be noted that previous versions of this WAAP referred to the County's Guidance Document (County of San Luis Obispo 2010); however, this document is now antiquated. The *2018-2019 Program Effectiveness Assessment and Improvement Plan* (or PEAIP, the five-year MS4 Program assessment and modification), summarizes BMPs the County is currently implementing. A table is provided in Appendix B that cross-references the historic Guidance Document BMPs, those specified in the 2018-2019 PEAIP, and responsible departments within the County for tracking purposes, but will the Guidance Document will no longer be referenced herein.

A. TMDL-Required BMPs

The TMDLs contain specific BMPs that must be implemented. These and the BMPs the County has identified to address the TMDL-required BMPs ("Applicable County Practice") are provided in Table 6.

Table 6. BMPs Identified for each TMDL

BMP[1]	BMP Implementation	Applicable County Practice
Morro Bay Pathogen TMDL		
Pet Waste Management	*Create an off-leash dog park, provide supplies to pick up pet waste, ordinance.*[2]	The County installed pet waste bag dispensers and maintains them with pet waste bags at Los Osos Community Park.
		The County developed a pet waste management poster and brochure, which is distributed at numerous locations, including on the County's website and social media/digital outreach platforms.
		The County implements its *Stormwater Enforcement Response Plan* (2019), which states the County's legal authority, applicable codes, enforcement process, and roles of County staff in enforcement.
Septic System Maintenance	*Inspect and maintain all septic systems throughout the Watershed.*	Septic and sewered areas are mapped and updated County-wide as part of Local Agency Management Program.
		The County regularly audits wastewater facilities and processes through operational permits.
		The County performs septic inspections and monitoring per the County's Local Agency Management Program.
		The County continues to inspect and maintain County-owned/operated septic systems.
		All properties served by OWTS in the prohibition area have been connected to the LOWRF.

[2] The TMDL contains a requirement for the County Division of Animal Services to "educate public to promote spaying and neutering pets" and "reduce the number of feral dogs/cats", which is performed as part of the regular services that Animal Services provides.

Table 6. BMPs Identified for each TMDL, Continued

BMP[1]	BMP Implementation	Applicable County Practice
Morro Bay Pathogen TMDL, Continued		
Phase II Stormwater Permit	*Incorporate actions to reduce bacteria loading into Morro Bay by implementing a stormwater management plan for … the Community of Los Osos*.	See below for applicable Permit BMPs.
-Public Involvement and Participation	-Involve the public in the development and implementation of activities related to the program.	The County implements public involvement efforts through participation in 'hands-on' regional events, such as Coastal Clean-Up Day, and other opportunities that focus on the connection of stormwater quality to the health of local waterways and Watersheds.
		The County implements a "Storm Drain Marking" campaign to repair or replace aging or damaged storm drain markers, which presents an opportunity to renew awareness of the connection from storm drains to local waterways.
		The County implements an Adopt-a-Road program that increases public awareness and participation for trash and pollutant control.
-Illegal Connection/ Illicit Discharge Detection and Elimination	-Inspect outfalls for evidence of illegal connection or illicit discharge	The County conducts an outfall inventory of priority outfalls in Los Osos and field sampling to detect illicit discharges (if required, per the Permit). Source Investigations and corrective actions are required for discharges exceeding the Permit's Action Level Concentrations. The County may elect to inventory additional outfalls to document the lack of dry weather flows and, thus, attain dry weather TMDLs.
		Suspected illicit discharges or illegal connections can be reported via the County's online reporting form, located on the Public Works Department's Stormwater website. Additionally, they can be reported by calling the Public Works Department; the phone number is published in outreach materials, their website, and digital media.
-Post-Construction Stormwater Management in New Development and Redevelopment	-Develop and implement strategies to reduce/ eliminate bacteria loading from MS4 areas potentially collecting or discharging bacteria to the Bay.	The County is actively implementing the PCRs and annually reports the number of projects with PCRs.
		The County implements its *Stormwater LID Handbook* (2017) that includes regulatory requirements, directions on how to complete the permit application, and site design strategies and measures. The County plans to revise the handbook into an improved technical guide in the future.

Table 6. BMPs Identified for each TMDL, Continued

BMP[1]	BMP Implementation	Applicable County Practice
Morro Bay Pathogen TMDL, Continued		
-Pollution Prevention and Good Housekeeping	-Develop and implement strategies to reduce/ eliminate bacteria loading from MS4 areas potentially collecting and discharging bacteria to the Creeks.	The County conducts street sweeping. The frequency and effectiveness will be re-evaluated and revised per the Trash Amendments and Trash Implementation Plan.
		The County performs routine inspection and cleaning of the storm drain system.
		The County conducts County-owned/operated facility inspections and maintains checklists used during the inspections.
		The County performs annual employee training regarding pollution prevention.
Los Osos Community Wastewater Treatment Plant	*Construct and maintain a wastewater treatment plant.*	This BMP was assigned to Los Osos Community Services District: however, the County constructed and operates the Los Osos Water Recycling Facility.
Morro Bay Sediment TMDL		
Road Maintenance	*Increase the use of management measures for road maintenance and construction.*	The County conducts street sweeping. The frequency and effectiveness will be re-evaluated and revised per the Trash Amendments and *Trash Implementation Plan*.
		The County performs routine inspection and cleaning of the storm drain system.
		The County implements several specific Procedural Memorandums as part of the American Public Works Association accreditation program, which include road maintenance and standard operating procedures.
		The County performs erosion and sediment control inspections for its Capital Improvement Projects (CIP) and all private construction sites within the MS4 permitted areas. The County provides construction site education and outreach information with 100% of Construction General Permit applications.
Stormwater Sediment Control on Roads	*Include specific road sediment control measures in County Stormwater Management Plan.*	See above BMP.

Table 6. BMPs Identified for each TMDL, Continued

BMP[1]	BMP Implementation	Applicable County Practice
Morro Bay Sediment TMDL, Continued		
Construction Projects	*Increase the use of management measures for road maintenance and construction.*	The County enforces all ordinances, including grading ordinance and compliance with the Construction General Permit and all staff attend annual training.
		The County performs erosion and sediment control inspections for its Capital Improvement Projects (CIP) and all private construction sites within the MS4 permitted areas. The County provides construction site education and outreach information with 100% of Construction General Permit applications.
Post-Construction Stormwater Management in New Development and Redevelopment	Develop and implement strategies to reduce/ eliminate sediment loading from streets, parking lots, sidewalks, and other urban areas potentially collecting and discharging sediment to the Bay.	The County implements the Central Coast Post-Construction Requirements (PCRs) and annually reports the number of projects with PCRs.
		The County implements its *Stormwater LID Handbook* (2017) that includes regulatory requirements, directions on how to complete the permit application, and site design strategies and measures. The County plans to revise the handbook into an improved technical guide in the future.
Nipomo Creek Bacteria TMDL		
Public Education and Outreach	Educate the public regarding sources of fecal coliform, health risks of fecal coliform in surface waters, actions that individuals can take to reduce loading.	The County provides stormwater pollution prevention educational material on its website and at various events.
		The County maintains a pollution prevention hotline number that is provided on all stormwater-related outreach materials.
Public Involvement and Participation	Involve the public in the development and implementation of activities related to the program.	The County implements public involvement efforts through participation in 'hands-on' regional events, such as Coastal Clean Up Day and other opportunities that focus on the connection of stormwater quality to the health of local waterways and watersheds.
		The County implements a "Storm Drain Marking" campaign to repair or replace aging or damaged storm drain markers, which presents an opportunity to renew awareness of the connection from storm drains to local waterways.
		The County implements an Adopt-a-Road program that increases public awareness and participation for trash and pollutant control.

Table 6. BMPs Identified for each TMDL, Continued

BMP[1]	BMP Implementation	Applicable County Practice
Nipomo Creek Bacteria TMDL, Continued		
Pet Waste Management	Enforce ordinance to reduce/eliminate fecal coliform loading from pet waste.	The County implements its *Stormwater Enforcement Response Plan* (2019), which states the County's legal authority, applicable codes, enforcement process, and roles of County staff in enforcement.
	Provide pet waste management education and cleanup supplies (waste bags).	The County installed pet waste bag dispensers and maintains them with pet waste bags. The County plans to map the bag dispenser locations (this has been done in the Morro Bay Watershed by the MBNEP).
		The County provides pet waste management educational media to the public via the Animal Services shelters, Woods Humane Society, within County Parks, and at public events focused on pets or pet health. The County biennially updates pet waste management public education information on its website.
Illicit Discharge Detection and Elimination	Implement strategies to detect and eliminate illicit discharges.	The County conducts an outfall inventory of priority outfalls in Nipomo and field sampling to detect illicit discharges (if required, per the Permit). Source Investigations and corrective actions are required for discharges exceeding the Permit's Action Level Concentrations. The County may elect to inventory additional outfalls to document the lack of dry weather flows and, thus, attain dry weather TMDLs.
		The County retains updated maps of the septic and sewered areas as part of Local Agency Management Program.
		Septic inspections and monitoring criteria will be incorporated into the County's Local Agency Management Program.
		The County will continue to inspect County owned/operated septic systems.
Post-Construction Stormwater Management in New Development and Redevelopment	Develop and implement strategies to reduce/ eliminate bacteria loading from streets, parking lots, sidewalks, and other urban areas to the Creek.	The County is actively implementing the PCRs and annually reports the number of projects with PCRs.
		The County implements its *Stormwater LID Handbook* (2017) that includes regulatory requirements, directions on how to complete the permit application, and site design strategies and measures. The County plans to revise the handbook into an improved technical guide in the future.

Table 6. BMPs Identified for each TMDL, Continued

BMP[1]	BMP Implementation	Applicable County Practice
Nipomo Creek Bacteria TMDL, Continued		
Good Housekeeping and Pollution Prevention for Municipal Operations	Develop and implement strategies to reduce/ eliminate bacteria loading from streets, parking lots, sidewalks, and other urban areas to the Creek.	The County conducts street sweeping. The frequency and effectiveness will be re-evaluated and revised per the Trash Amendments and Trash Implementation Plan.
		The County performs routine inspection and cleaning of the storm drain system and of County-owned/operated facilities.
		The County implements several specific Procedural Memorandums as part of the American Public Works Association accreditation program, which include road maintenance and standard operating procedures.
		The County performs annual employee training regarding pollution prevention.
Nipomo Creek Nutrients TMDL		
Public Education and Outreach	Educate the public regarding sources of nutrients in surface waters and actions that individuals can take to reduce loading.	The County provides stormwater pollution prevention educational material on its website and at various events. The County will develop tips for control of fertilizers and other landscaping materials on its digital platforms.
		The County maintains a pollution prevention hotline number that is provided on all stormwater-related outreach materials.
		The County provides a link the *Waterwise Landscaping for San Luis Obispo County* website on the Public Works Stormwater *Frequently Asked Questions* webpage. The *Waterwise* webpage includes extensive information about sustainable fertilization, composting, using water wisely, and other actions that can be taken to reduce fertilizer loading in runoff from landscaping.
Illicit Discharge Detection and Elimination	Develop and implement strategies to detect and eliminate illicit discharges.	The County conducts an outfall inventory of priority outfalls and field sampling to detect illicit discharges (if required, per the Permit). Source Investigations and corrective actions are required for discharges exceeding the Permit's Action Level Concentrations. The County may elect to inventory additional outfalls to document the lack of dry weather flows and, thus, attain dry weather TMDLs.
		The County's Certified Unified Program Agency (CUPA) inspectors are trained to detect illicit discharges and follow-up reporting and guidance.

Table 6. BMPs Identified for each TMDL, Continued

BMP[1]	BMP Implementation	Applicable County Practice
Nipomo Creek Nutrients TMDL		
Post-Construction Stormwater Management in New Development and Redevelopment	Develop and implement strategies to reduce/ eliminate nutrient loading from urban areas to the Creek.	The County is actively implementing the PCRs and annually reports the number of projects with PCRs.
		The County implements its *Stormwater LID Handbook* (2017) that includes regulatory requirements, directions on how to complete the permit application, and site design strategies and measures. The County plans to revise the handbook into an improved technical guide in the future.
Good Housekeeping and Pollution Prevention for Municipal Operations	Develop and implement strategies to reduce/ eliminate nutrient loading from urban areas to the Creek.	The County conducts street sweeping. The frequency and effectiveness will be re-evaluated and revised per the Trash Amendment and Trash Implementation Plan.
		The County performs routine inspection and cleaning of the storm drain system.
		The County implements several specific Procedural Memorandums as part of the American Public Works Association accreditation program, which include road maintenance and standard operating procedures.
		The County performs annual employee training regarding pollution prevention.
		The County performs regular facility inspections, per the Permit.
Notes: 1 The BMPs identified for Morro Bay in italics are "trackable actions" included in the TMDLs. Nipomo Creek TMDLs do not include "trackable actions".		

B. Additional BMPs

Additional BMPs have been selected for implementation within the Morro Bay and Nipomo Creek Watersheds to specifically address bacteria impairments in receiving waters. As stated in Section III, additional BMPs are not necessary to address sediment loading in the Morro Bay Watershed, since the vast majority of the loading is from non-urban land uses outside of the MS4 area. Also as stated in Section III, the Nipomo Creek Watershed's historic monitoring data demonstrates that the receiving waters are in compliance with the TMDL and typical urban runoff rarely exceeds nutrient WLAs. Therefore, additional BMPs will focus on control of bacterial sources identified in Section III. These BMPs will be implemented in addition to those specified by the TMDL and were selected based on the source assessments presented in Section III, knowledge of effective bacteria BMPs from various studies, and past experience/knowledge of the MS4 area and stormwater program. If water quality monitoring indicates that the Nipomo Creek nutrient WLAs are not being met or a need arises for additional sediment control BMPs in the Morro Bay Watershed, the County will assess applicable BMPs as part of the effectiveness assessment (Section VII) and adaptive management (Section VIII). Additional BMPs will be implemented per a defined schedule.

ANIMAL FACILITIES MANAGEMENT AND ANIMAL WASTE CONTROLS

As stated in Section III, the County is currently constructing a new Animal Services Facility in the Morro Bay Watershed that will have state-of-the-art cleaning, plumbing, and mechanical systems. Although currently the potential for animal-related FIB discharges from the facility is low due to the County's management practices and lack of storm drain infrastructure that could transport runoff from the facility to Chorro Creek, it will be further reduced once the new facility is in place.

The County will develop educational tips and/or articles on topics such as animal waste management and wash-water containment, for insertion into digital media. The County has determined that distributing brochures via commercial facilities has been largely ineffective, so this practice will be discontinued. However, pet waste management and pollution control brochures may be offered at applicable public events in the future.

Additionally, the County implements Title 22, Land Use Standard, Chapter 22.30.090 *Animal Keeping and Animal Facilities Standards* that limits the number of animals and has specifications for maintenance and operations, including erosion and sediment control and vector control. Environmental Health Services Division will continue to review manure management plans for facilities with a significant number or density of livestock.

COMMERCIAL/INDUSTRIAL INSPECTIONS

The County's Environmental Health Services Division performs inspections of commercial restaurant and industrial food processing facilities within County MS4 annually. The inspections include stormwater-related observations and the inspectors are trained in pollution prevention and illicit discharge detection. The department has an aggressive enforcement arm, with procedures that include re-inspection and follow-up. The County's website provides a for the public to file complaints with Environmental Health Services for observations of pollutant releases from restaurants and businesses. They follow-up on every report received. Furthermore, the County CUPA performs inspections of hazardous materials areas and the County has adopted codes related to prohibitions of discharges from grease traps, trash enclosures, and other sources (Title 8, Title 22).

WATER CONSERVATION

Within the applicable TMDL Watersheds, the County will continue to support existing education and outreach programs that focus on conserving water, reducing dry-weather flows from irrigation, and using of drought-resistant landscaping.

The County is required to adopt, implement, and enforce the Model Water Efficient Landscape Ordinance (MWELO) for new development and retrofitted landscape water efficiency standards. This standard encourages the use of more efficient irrigation systems, graywater, and on-site stormwater capture, and limits the use of landscape turf. The County Department of Planning and Building has a *Performance-Based Compliance Package* (for large projects) and *Prescriptive Compliance Documentation* (for small projects) that are to be completed by project applicants with the intent of assisting applicants and the County determine project compliance with the MWELO.

DRY-WEATHER MS4 INSPECTION PROGRAM

The County will continue to update their GIS database of all County-owned storm drains in the MS4 permit areas. The County will annually inspect priority outfalls in Los Osos and Nipomo to observe the presence of flow in the MS4 system. Where flow is observed, the County will follow the Permit requirements for assessment and follow-up.

ENCAMPMENT MANAGEMENT

Transient encampments within the Watershed are a potential source of bacteria. The increasing number and size of encampments across the County presents a significant challenge to protecting surface water quality. In 2019 the County began development of a mobile application, the Transient Encampment Mapping Application (TEMP App), to track the locations, size, and status of transient encampments. The TEMP App will help peace officers and service providers locate encampments and provide focused outreach. It will also support the multiple jurisdictions that are involved in encampment sanitation, cleanup and removal efforts.

The shifting landscape of case law associated with encampment cleanup precludes the ability of the County to conduct cleanups as described in previous versions of this WAAP. The County anticipates developing Encampment Cleanup Best Practice procedures to ensure safe, consistent and lawful cleanups are conducted. These cleanups typically require collaboration across multiple departments and jurisdictions and are costly and logistically challenging. The County is also exploring a pilot program to enable more regular trash removal from sites where encampments are consistently present. Additional BMP implementation is summarized in Table 7.

Table 7. Additional BMP Implementation

Additional BMP	County Implementation Actions	Implementation Schedule
Animal Facilities Management and Animal Waste Control	A new Animal Services Facility in the Morro Bay Watershed will have state-of-the-art cleaning, plumbing, and mechanical systems. The County will develop animal facility and waste management tips for inclusion in digital media The County will continue to enforce, Title 22, Land Use Standard, Chapter 22.30.090 *Animal Keeping and Animal Facilities Standards*. Environmental Health Services Division will continue to review manure management plans for facilities with a significant number or density of livestock.	Currently conducted and ongoing. Tips will be developed in the 2021-2022 Permit reporting year.

Table 7. Additional BMP Implementation

Additional BMP	County Implementation Actions	Implementation Schedule
Commercial/ Industrial Inspections	The County will continue to conduct facility inspections, complete checklists, enforce procedures and County code, and follow-up on reports and complaints. The County's website will continue to provide a service for the public to file complaints with Environmental Health Services for observations of pollutant releases from restaurants and businesses. The County has adopted codes related to prohibitions of discharges from grease traps, trash enclosures, and other sources (Title 8, Title 22). The County CUPA performs inspections of hazardous materials areas.	Currently conducted and ongoing.
Water Conservation	The County will continue to support existing education and outreach programs. The County will continue to implement and enforce the MWELO for new development and retrofitted landscape water efficiency standards. The County Department of Planning and Building will continue to provide the *Performance-Based Compliance Package* (for large projects) and *Prescriptive Compliance Documentation* (for small projects) to project applicants with the intent of assisting applicants and the County determine project compliance with the MWELO.	Currently conducted in Morro Bay and Nipomo Creek Watersheds. Currently conducted in Morro Bay and Nipomo Creek Watersheds. Currently conducted in Morro Bay and Nipomo Creek Watersheds.
Dry-weather MS4 Inspection Program	The County will continue to update their GIS database and map of all County-owned storm drains in the MS4 permit areas. The County will inspect its priority outfalls in Los Osos and Nipomo to observe the presence of flow in the MS4 system and conduct field sampling and follow-up actions, per the Permit.	Currently conducted in Morro Bay and Nipomo Creek Watersheds

Table 7. Additional BMP Implementation, Continued

Additional BMP	County Implementation Actions	Implementation Schedule
Encampment Management	The County will continue the use of a mobile app to track the locations, size, and status of transient encampments. The County anticipates developing Encampment Cleanup Best Practice procedures to ensure safe, consistent, and lawful cleanups are conducted. The County is also exploring a pilot program to enable more regular trash removal from sites where encampments are consistently present.	Currently conducted in Morro Bay and Nipomo Creek Watersheds. Cleanups have been implemented in Arroyo Grande Creek channel (outside of the TMDL areas). Pending the outcome of case law and other agency coordination, they may be conducted in the Morro Bay and Nipomo Creek Watersheds in the future per the to-be-developed Encampment Cleanup Best Practice procedures.

V. Demonstrating Wasteload Allocation Attainment

Each TMDL has a final target date in which the WLAs are to be achieved. Interim targets will be used as benchmarks in assessing progress towards the final WLAs. Interim targets represent the County's goals and are not enforceable. The TMDLs allow responsible dischargers to develop and propose the interim targets or use the interim targets provided in the TMDL, if applicable (per Permit Attachment G, provided in Appendix A). The Morro Bay Pathogen TMDL does not contain interim targets, but the Nipomo Creek Fecal Indicator Bacteria and Nutrients TMDLs do. The Morro Bay Sediment TMDL contains interim targets, but as stated in Section I above, it does not propose direct measurement of loading as a means of achieving the TMDL. Per Permit Attachment G (Appendix A), if the TMDL does not include interim targets, the established interim targets are to be equally spaced in time over the TMDL attainment schedule and represent measurable, continually decreasing MS4 discharge concentrations, and progress towards WLA attainment[3]. The interim and final target dates for achieving the TMDL WLAs are shown in Table 8.

[3] Permit Attachment G states, "Where TMDL attainment schedules have passed, but Wasteload Allocations have not been achieved by January 1, 2019, the MS4 shall consult with the Regional Water Board to establish dates to meet new interim targets and to achieve wasteload allocations. At least one interim target and date must occur during the five years commencing on January 1, 2019. The MS4 shall achieve its interim targets by the date it specifies in the Wasteload Allocation Attainment Program. If the MS4 does not achieve its interim target by the date specified, the MS4 shall develop and implement more effective BMPs that it can quantitatively demonstrate will achieve the next interim target."

Table 8. TMDL Compliance Deadlines

TMDL	Pollutant	Interim Target	Final Target
Morro Bay Pathogen	Fecal Coliform	Not Applicable	11/19/2013
Morro Bay Sediment	Sediment	12/3/2028 (50%)[2]	12/3/2053
Nipomo Creek Fecal Indicator Bacteria	Fecal Coliform and *E. Coli*	2/21/2018 (20%) and 2/21/2023 (50%)[2]	2/21/2028
Nipomo Nutrients	Nitrate as Nitrogen	5/22/2034 (Wet Season)[3]	5/22/2044
Nipomo Nutrients	Un-ionized Ammonia as Nitrogen	5/22/2026	5/22/2044

Notes:

1 County-established interim target. The original TMDL attainment target has passed and it is unknown whether the WLA was achieved by 1/1/2019 (the date provided in Permit Attachment G). The new interim target proposed by the County is a 20% reduction by 1/1/2024 (i.e., within five years of 1/1/2019, per Permit Attachment G) and 20% reduction every five years following, until the WLA is achieved.

2 Values listed in () represent the progress toward the WLA that should be achieved by the listed interim target date.

3 No interim targets are listed for the dry season.

A. Demonstration of Bacteria WLA Compliance

The TMDL WLAs for bacteria are concentration-based metrics that are used for MS4 permit compliance assessment. However, Santa Maria River Bacteria TMDL Basin Plan amendment (Central Coast Water Board, 2019) states that responsible parties may also demonstrate that, although WQOs are not being achieved in receiving waters, controllable sources of pathogens are not contributing to the exceedance. If this is the case, the Central Coast Water Board may reevaluate the numeric target and allocations (i.e., pursue and approve a site-specific objective). A site-specific objective would be based on evidence that natural or background sources alone were the cause of exceedances of the WQO for FIB. Therefore, this WAAP proposes alternate WLA language for Santa Maria River Bacteria TMDL for Central Coast Water Board consideration. The proposed language allows multiple optional pathways to achieve and demonstrate compliance, thus allowing MS4 dischargers flexibility in their compliance implementation pathway (or multiple lines of evidence to demonstrate compliance). This language is based in part on the bacteria TMDL compliance language in the San Diego Regional Phase I MS4 Permit (San Diego Water Board, 2013, as amended by Order No. R9-2015-0001 and R9-2015-0100 NPDES NO. CAS0109266). Compliance may be demonstrated by any one of the following pathways:

1. Demonstration of zero discharge from MS4 outfalls during the reporting period (primarily applicable to dry weather);
2. Outfall compliance monitoring locations meet the REC 1 Basin Plan Objectives;
3. Receiving water compliance monitoring locations meet the REC 1 Basin Plan Objectives;
4. Outfall monitoring demonstrates compliance with the WAAP-based target load reductions (TLR) (applicable to wet weather only);
5. Representative outfall samples for MST markers demonstrate absence of anthropogenic waste (i.e., no human or pet waste markers in MS4 discharge); or

6. Implementation of an approved WAAP, according to the milestones and schedule established therein.

Based on this proposed language, Table 9 summarizes how the County is demonstrating compliance with the Santa Maria River Bacteria TMDL, and if this language can be incorporated into the other applicable bacteria TMDLs, how the County is demonstrating compliance with them. The compliance demonstration approaches listed here may be expanded at a future date after recent outfall and receiving water monitoring data are reviewed, future special studies are performed, and/or other activities are performed to monitor the various proposed compliance pathways. Future monitoring efforts are expected to determine whether compliance is being achieved by one (or more) of the above compliance pathways.

Table 9. Approaches Being Used by the County to Demonstrate Compliance with Applicable Bacteria TMDL WLAs

TMDL	WLA Compliance Date	Compliance Demonstration Approach
Morro Bay Bacteria	11/19/2013	Implement strategies discussed in this WAAP, including BMPs and monitoring according the milestones and schedule (Proposed Compliance Pathway #6).
Santa Maria River Bacteria	2/21/2028	Implement strategies discussed in this WAAP, including BMPs and monitoring according the milestones and schedule (Proposed Compliance Pathway #6).

B. Demonstration of Sediment WLA Compliance

According to the Morro Bay Sediment TMDL[4], the continued implementation of the County's sediment control BMPs, identified in the Table 6 *BMPs Identified for each TMDL*, demonstrates compliance unless the Central Coast Water Board indicates that BMPs are failing to reduce sediment loads. At this point, the Central Coast Water Board has not indicated that the County BMPs were insufficient or that the sampling results reveal insufficient loading reductions; therefore, the County is demonstrating compliance with the Morro Bay Sediment TMDL.

C. Demonstration of Nutrient WLA Compliance

Nipomo Creek is not impaired for un-ionized ammonia as N, and although it is listed for nitrate as N (as of the 2014 303[d] listing), it does not exceed the WQOs, per the TMDL (Attachment 2, *Project Report*). It states the nutrient TMDLs for Nipomo Creek are "proactively established using targets and allocations consistent with Basin Plan numeric water quality objectives (WQOs) for associated pollutants (0.025 mg/L un-ionized ammonia, 10 mg/L nitrate as nitrogen)." (Central Coast Water Board 2013). Furthermore, as stated in Section III, County MS4s are not expected to contribute concentrations above the WLA values, based on MS4 outfall monitoring data collected elsewhere in California; therefore, the County is demonstrating compliance with Nipomo Creek Nutrient TMDL.

D. Proposed Interim Targets

Interim targets are goals that provide a basis for assessing progress towards the WLAs assigned in each

[4] This language was not incorporated into the draft Permit TMDL provision and therefore, may not be effective.

TMDL. The Santa Maria River bacteria TMDL specifies that "implementing parties may develop and propose interim targets as part of their WAAP as demonstration of progress" (Central Coast Water Board, 2012). Thus, County-specific interim targets pertaining to the bacteria in MS4 outfalls in Nipomo Creek have been developed. Nutrient interim targets for Nipomo Creek remain the same as outlined in the TMDL. These interim targets will be applied to the County's discharge (for bacteria) or receiving water (nutrients) sampling locations identified in the Nipomo Creek Watershed. The FIB TMDL attainment target dates for Morro Bay and Nipomo Creek (for the flow-based target) have passed the final effective dates and therefore, interim targets are not applicable. Since the Morro Bay sediment TMDL does not have interim targets explicitly stated in the TMDL, interim targets and the interim target dates have been included in Table 10.

Table 10. Proposed TMDL Interim Targets

WLA		Proposed Interim Targets[1]	Target Date
Morro Bay Pathogens	Year-Round	Achieve a 20% reduction by 2024 and 10% every five years following until the County-assigned WLAs are met[2]	11/19/2013
Morro Bay Sediment	Wet Weather	Achieve a 50% reduction in the wasteload allocated to the County (2,567 tons/year)[3]	12/3/2028 (25 years from effective date, 12/3/03)
Nipomo Bacteria	Dry Weather	Flow-based target: Establish baseline MS4 discharge volume and number of locations with intermittent and/or persistent dry weather discharge based on a minimum of 3 dry weather monitoring events during year 1 (2016), then reduce flow volume or occurrence by 50%.	2/21/2018 (5 years from effective TMDL date, 2/21/13)
	Wet Weather	Concentration-based target: Establish existing MS4 discharge concentrations based on a minimum of 3 wet weather sample events performed during year 1 (2016), reduce the concentration by 50%.	2/21/2023 (10 years from effective TMDL date, 2/21/13)
Nipomo Nutrients	Year-Round	Achieve interim WLA for un-ionized ammonia as N.	5/22/ 2026 (12 years from the TMDL effective date, 5/22/14)
		Achieve interim WLA for nitrate as N.	

Notes:

1 Bacteria interim targets are *proposed* (i.e., alternative to the default language stated in the TMDL Basin Plan Amendment) and assume 50 percent progress by the compliance midpoint. Nutrient interim targets are taken directly from the TMDL.

2 County-established interim target. The original TMDL attainment target has passed and it is unknown whether the WLA was achieved by 1/1/2019 (the date provided in Permit Attachment G). The new interim target proposed by the County is a 20% reduction by 1/1/2024 (i.e., within five years of 1/1/2019, per Permit Attachment G) and 10% reduction every five years following, until the WLA is achieved.

3 MBNEP is responsible for monitoring the receiving waters and implementing the majority of "trackable implementation actions" to achieve this target.

VI. Monitoring Program

Pursuant to Permit Attachment G, the TMDL Monitoring Program is intended *to assess discharge and receiving water quality, BMP effectiveness, and progress towards any interim targets and ultimate attainment* of the County's WLAs (Appendix A). TMDL monitoring performed by the County will produce both quantitative and qualitative data that can be used to address these goals. The 2020 *WAAP Sampling and Analysis Plan* (County of San Luis Obispo 2020) describes TMDL monitoring methodologies in detail. A summary of the program is as follows:

- Monthly site visits will be conducted at all active sampling locations. If the site sustains flowing water, field measurements will be taken and single grab samples will be collected. Discharge and stream flow velocity will be measured. If flow is inadequate for sampling, this will be reflected on the field logs. Photographs of the monitoring points and any observed potential pollutant sources will be taken as needed as a record of conditions. If site conditions are unsafe, the location will not be monitored, this will be recorded in the field log, and a follow-up visit will be performed once conditions are improved.

- Any site that has sufficient flow to collect grab samples during a monthly event will be revisited up to four additional times over a 30-day period and attempt will be made to collect FIB grab samples (i.e., fecal coliform and *E. coli*) for laboratory analysis. These subsequent site visits within the 30-day period will be equally spaced apart to the extent possible. Five samples collected over a period of 30 days will allow for the County to calculate a geomean pursuant to methods specified by the State Water Resources Control Board (State Water Board).

- Dry weather sampling will occur outside of 72 hours of any rain event resulting in greater than 0.1 inch of rain within a 24-hour period. During the rainy season (Oct 1 – May 30), the County will attempt to perform a minimum of three wet-weather sampling events. Wet-weather sampling events will not be in addition to the aforementioned monthly events, but will qualify as a monthly event. No more than one wet-weather event will be performed per month. Each wet-weather monitoring event will consist of the initial sampling event and four additional sampling events over a 30-day period, so that a geometric mean can be calculated. A wet-weather sampling event will be defined as a day on which at least 0.25 inch of rain has fallen within a 24-hour period. Samples will be collected within 24 hours of this threshold being met. In order to distinguish between wet and dry days, the County will use their existing, real-time precipitation gauge network to monitor rainfall.

- Samples will be analyzed at the County's analytical laboratory or submitted to an alternative laboratory with Environmental Laboratory Accreditation Program certification (ELAP, administered by California Department of Health Services) within the analytical method hold times. The County's laboratory employs a quality assurance program for the laboratory staff, instrumentation and equipment, materials and methods, media and reagents, and data validation. The quality assurance/quality control (QA/QC) measures will be stated in the sample result reports.

- The County will retain all sample results in a comprehensive spreadsheet to allow for the tracking of water quality over time. A summary of annual sampling results will be submitted with the County's Annual Report.

Specific monitoring program information for each Watershed is summarized below.

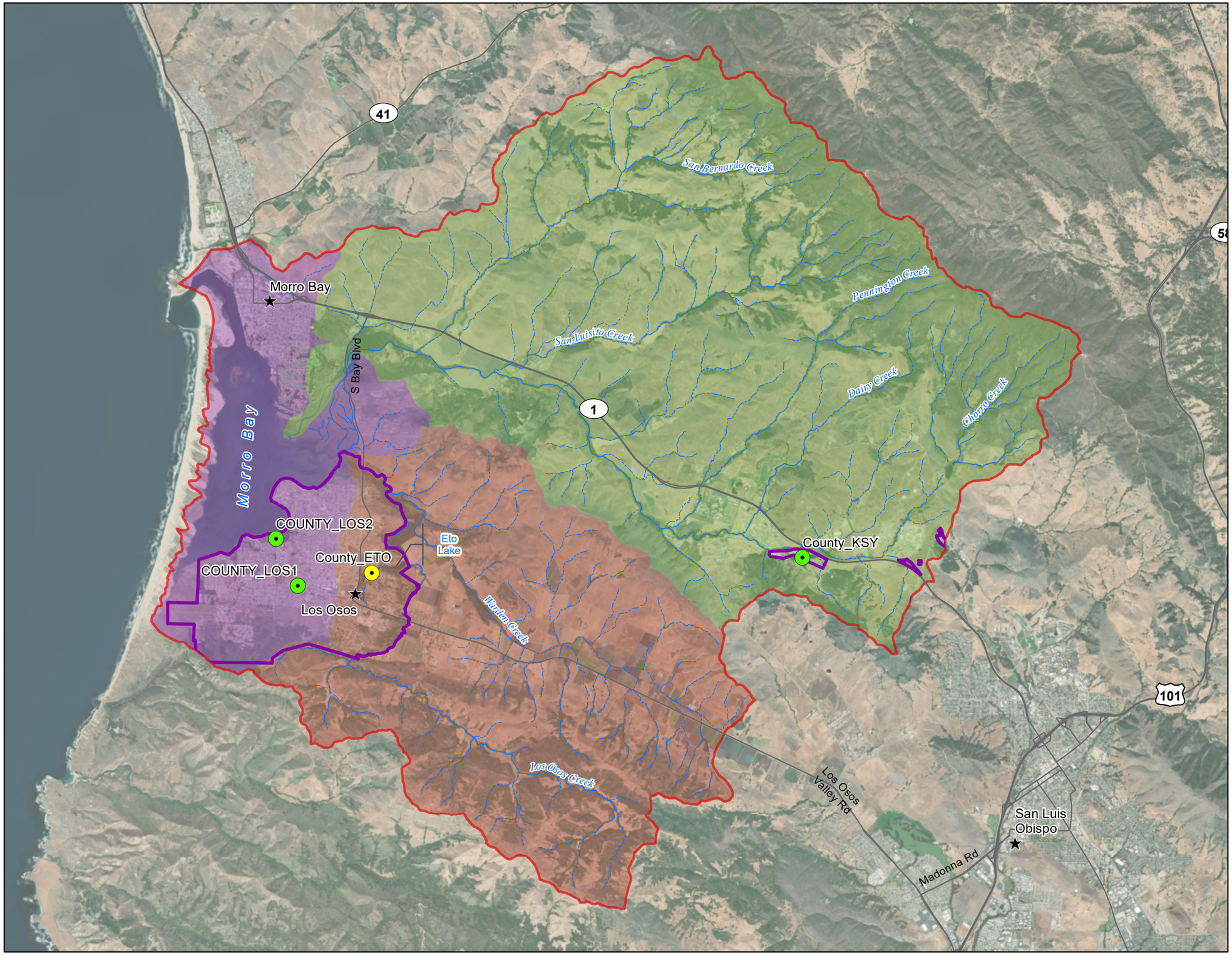
A. Morro Bay Pathogen TMDL

The County's FIB sampling program within the Morro Bay Watershed is performed in addition to monitoring conducted by the MBNEP and others, most of which focus on characterizing receiving waters. County sampling locations have been modified over time and were selected based on County MS4 contributing land uses, BMP locations, and accessibility. County sampling will be performed at three outfalls and one receiving water site, all of which are downstream of the County's MS4 area with TMDL-applicable land uses. Table 11 summarizes active and inactive sampling locations. Figure 5 depicts active sampling locations.

Table 11. County Bacteria Sampling Locations in the Morro Bay Watershed

Sub-watershed	Location ID	Location Type	Status and Rational	Location Description	Lat/Long
Los Osos Creek	County_ETO	Receiving Water	Active: Receiving water downstream of residential land use within MS4 area.	Los Osos Creek tributary, immediately upstream of Eto Lake, near Hollister Lane Crossing.	35.315106, -120.820607
Coastal Outfall	County_LOS1	MS4 Outfall	Active: Outfall drains residential, commercial, and public facility areas within County MS4 area; allows for assessment of BMP implementation but should not be used to determine loading to Morro Bay or its tributaries.	MS4 pipe discharge to land, between Palisades Ave. and Ravenna Ave along Los Osos Valley Road.	35.312241, -120.837689
Coastal Outfall to Bay	County_LOS2	MS4 outfall	Active: Outfall drains residential land use within County MS4 area to Morro Bay; allows for assessment of BMP implementation.	MS4 pipe discharge to Morro Bay, at the northern end of Broderson Ave., near the entrance of Sweet Springs Preserve.	35.321081, -120.843128

Notes: Refer to the *TMDL WAAP Sampling and Analysis Plan* for inactive sampling locations and descriptions.



Legend

Sampling Location Type

- Outfall Sampling
- Receiving Water Sampling
- County MS4 Area

Stream Type

- Intermittent
- Perennial
- Major Roads and Highways
- Morro Bay Watershed Boundary

Subwatershed

- Chorro Creek
- Los Osos Creek
- Morro Bay

N

0 0.75 1.5 3 Miles

County of San Luis Obispo

Morro Bay Watershed Sampling Locations

TMDL Wasteload Allocation Attainment Plan

TETRA TECH
3201 Airpark Drive, Suite 108
Santa Maria, CA 93455

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
39577	11/7/2019	Sanford	1073	5

Location ID "County_LOS1" is an outfall that discharges to land and not to receiving waters. This location was selected to allow for assessment of BMP implementation and should not be used to determine loading to Morro Bay or its tributaries. Location ID "County_LOS2" does discharge to Morro Bay; it represents a primarily residential land use within Los Osos. The single receiving water location (Los Osos Creek tributary) was selected because the catchment area is entirely within the community of Los Osos and drains a variety of land uses, including a significant portion of the commercial area in Los Osos. The tributary flows to Eto Lake before discharging to Los Osos Creek.

B. Morro Bay Sediment TMDL

Sediment monitoring programs in the Morro Bay Watershed were developed in coordination with MBNEP and the Friends of the Estuary Volunteer Monitoring Program. The TMDL's monitoring plan identifies 10 sites within the Morro Bay Watershed that are the responsibility of the Central Coast Water Board and the MBNEP Volunteer Program. The TMDL states that reporting will include the calculation of 10-year rolling averages of residual pool volume, median diameter, percent of fine fines, percent of coarse fines, and tidal prism volume. TMDL monitoring conducted by the Central Coast Water Board will include the tracking of implementation actions.

C. Santa Maria River Bacteria and Nutrient TMDLs

CCAMP monitoring data for two Nipomo Creek sites (312NIP [downstream] and 312NIT [upstream][5]), dating back to the year 2000, was used during development of the Santa Maria Watershed TMDLs. Median fecal coliform concentrations were similar at the two sites and both single sample and log mean WLAs were exceeded. Although an increase in *E. coli* concentrations was observed from upstream to downstream in the Nipomo Creek Watershed, it cannot be determined if this is due to discharges from the Nipomo MS4. Both CCAMP sampling locations receive runoff from non-urban land uses (i.e., agriculture) outside of the County's MS4 area.

Historic CCAMP data for nutrients suggest that nutrient concentrations in receiving waters are not frequently exceeding final TMDL WLAs in Nipomo Creek. Furthermore, County MS4 discharges are not expected to exceed these WLA concentrations based on Southern California water quality sampling studies of MS4 stormwater discharges (Robinson 2005 and Stein 2007).

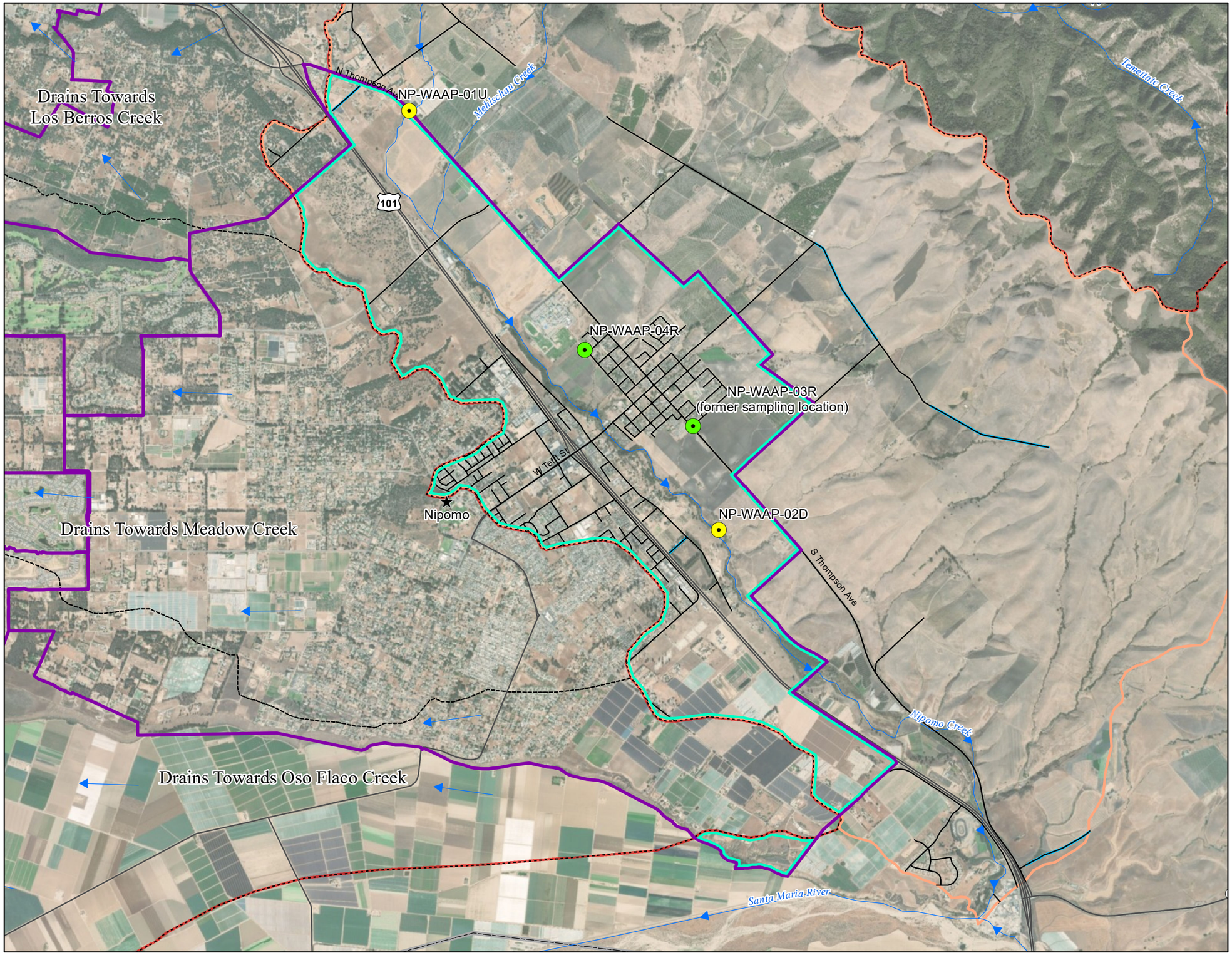
The County will perform monthly monitoring at monitoring locations described in Table 12 and shown in Figure 6. During all historic monitoring events, flow was not observed at the previous outfall monitoring location, so a new outfall monitoring location was selected at Nipomo Creek at Mallagh Street and Sea Street (Site ID: NP- WAAP- 04R). This outfall receives runoff from mostly residential areas (the predominant land use type). Receiving water sites are located at the upstream and downstream boundaries of the County's MS4 Permit area to identify potential changes as a result of discharges from the contributing land uses within the MS4 area.

[5] 312NIP is downstream of the County's "downstream" sampling site, outside of the MS4 area (located at Nipomo Creek at Highway 166). 312NIT is downstream of the County's "upstream" sampling site (located at Nipomo Creek at Tefft Street).

Table 12. County Sampling Locations in the Nipomo Creek Watershed

Location ID	Location Type	Status and Rational	Location Description	Lat/Long
NP-WAAP-01U	Receiving Water	Active: Receiving water upstream of County MS4 area; allows for upstream and downstream receiving water analysis.	Nipomo Creek upstream of the County MS4 Permit area, on the west side of Thompson Avenue, where it crosses Nipomo Creek.	35.067846, -120.503213
NP-WAAP-02D	Receiving Water	Active: Receiving water downstream of County MS4 area; allows for upstream and downstream receiving water analysis.	Nipomo Creek downstream of the County MS4 Permit area, accessed from the rear of the Dana Adobe Estate.	35.029726, -120.468813
NP-WAAP-04R	MS4 Outfall	Active: Outfall drains residential land use within County MS4 area to Nipomo Creek; allows for assessment of BMP implementation.	Nipomo Creek residential area of the County MS4 Permit area, outfall Mallagh Street and Sea Street.	35.044774, -120.482264

Grab samples will be analyzed for nitrate as nitrogen, un-ionized ammonia as nitrogen, fecal coliform, and *E. coli*. As with the Morro Bay FIB TMDL, any site that has sufficient flow to collect grab samples during a monthly event will be revisited four additional times to collect additional FIB samples, evenly spaced over the following 30 days to allow for the geomean calculation.



Legend

- County MS4 Area
- Applicable WAAP Area
- County Boundary
- Adjacent Watershed Boundaries
- Nipomo Creek Subwatershed
- Santa Maria River Watershed

Sampling Location Type

- Outfall Sampling
- Receiving Water Sampling

Roads

- Highways
- County Maintained Paved Road
- County Maintained Gravel Road

N

0 0.5 1 2

Miles

County of San Luis Obispo

Nipomo Creek Subwatershed Sampling Locations

TMDL Wasteload Allocation
Attainment Plan

TETRA TECH
3201 Airpark Drive, Suite 108
Santa Maria, CA 93455

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
39577	7/16/2019	Sanford	1075	6

VII. Effectiveness Assessment

Permit Attachment G (Appendix A) requires this WAAP to describe how the County will:

- Assess BMP and program effectiveness that incorporates the assessment methods described in the CASQA *Municipal Storm Water Program Effectiveness Assessment Guide* (CASQA Guide);
- Assess attainment of interim targets and the final WLA; and
- Modify the program to improve upon BMPs determined to be ineffective during the effectiveness assessment.

The CASQA Guide is intended to "provide background on the development and use of strategic planning methods and describe how planning results can be used to direct program resources, establish measurability, and assess the effectiveness of stormwater management programs." The CASQA Guide defines outcomes that are specific measurements by which stormwater programs can be targeted, evaluated, and periodically modified. The CASQA Guide defines six Outcome Levels:

- Outcome Level 6: Receiving Water Conditions
- Outcome Level 5: Improving Water Quality
- Outcome Level 4: Drainage Area and Source Contributions
- Outcome Level 3: Target Audience Actions
- Outcome Level 2: Barriers and Bridges to Action
- Outcome Level 1: Documenting Stormwater Program Activities

This WAAP Effectiveness Assessment will focus on Outcome Levels 4, 5, and 6. Attainment of the TMDLs is the ultimate goal of the WAAP and this will be determined by continually monitoring water quality in the applicable Watersheds and comparing data to the WLAs. However, the TMDLs require BMP implementation that corresponds to Outcome Levels 1, 2, and 3, which will be tracked using the following methods:

- BMP completion confirmation;
- Tabulation;
- Surveys; and
- Inspections/ observations.

The WAAP BMPs and their assessment methods and measurable goals are provided in Table 13. It is inherently difficult to determine the effectiveness of non-structural BMP implementation on receiving water quality. Therefore, the County will use its knowledge of the Watersheds, potential pollutant sources, and BMP implementation over time to assess the impact the stormwater program is having on controllable MS4 pollutant sources. To perform the assessment the County will review water quality monitoring data over the year and over the life of the program; use Table 13 to verify BMP implementation and make adjustments to changed or ineffective BMPs; and use this information to understand if the program is achieving the intended outcomes (i.e., attainment of interim targets and the final WLA).

Table 13. BMP Effectiveness Measures for Permit-Required BMPs

Permit Section	Applicable Permit Requirement	County BMP Implementation	Applicable TMDL (Morro Bay Pathogen = MBP, Morro Bay Sediment = MBS, Nipomo Creek Bacteria = NCB, Nipomo Creek Nutrients = NCN)	Target Pollutants	Assessment Method (Completion Confirmation = CC; Tabulation = T; Surveys = S; Inspections/ Observations = IO)	Assessment Measure
E.6 Legal Authority	Enforce an ordinance to control pollutant discharges into and from the MS4.	The County implements County Code Section 8.68, which prohibits non-stormwater discharges to the MS4 (other than those authorized by the Permit), littering, and illicit connections.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	CC	Confirmation of implementation/ completion.
	Effectively prohibit non-storm water discharges through the MS4.					
	Detect and eliminate illicit discharges and illegal connections to the MS4.	The County implements its *Stormwater Enforcement Response Plan* (2019), which states the County's legal authority, applicable codes, enforcement process, and roles of County staff in enforcement.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	T	Tabulation of number of reported illegal discharges/connections, discharges/ connections that required follow-up actions, and number of discharges ceased.
	Respond to the discharge of spills and enforce/carry out clean-up and abatement.	County Code Enforcement staff enforce the illicit stormwater discharge ordinance.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients		
	Require parties responsible for runoff in excess of incidental runoff to implement Discharge Prohibition.					
E.7 Public Education and Outreach	Develop and publish/distribute educational material to target audiences about pollutants of concern.	The County installed pet waste bag dispensers and maintains them with pet waste bags within the Morro Bay Watershed at Los Osos Community Park and at Nipomo Community Park, which is outside of the MS4 TMDL jurisdiction, but is likely used within the MS4 jurisdiction. The County plans to map the dispenser locations.	MBP, NCB, NCN	Pathogens, Bacteria, Nutrients	CC	Confirmation of implementation/ completion.
		The County has developed a pet waste management brochure and poster, which are distributed at numerous locations, including on the County's website and social media/digital outreach platforms.	MBP, MBS, NCN	Pathogens, Bacteria, Nutrients		
		The County provides pet waste management educational media to the public via the Animal Services shelters, Woods Humane Society, within County Parks, and at public events focused on pets or pet health. The County biennially updates pet waste management public education information on its website.	MBP, NCB, NCN	Pathogens, Bacteria, Nutrients	T, S	Tabulation of number of locations and events educational media was distributed to; tabulation/ survey of comments/ feedback received.

Table 14. BMP Effectiveness Measures for Permit-Required BMPs, Continued

Permit Section	Applicable Permit Requirement	County BMP Implementation	Applicable TMDL (Morro Bay Pathogen = MBP, Morro Bay Sediment = MBS, Nipomo Creek Bacteria = NCB, Nipomo Creek Nutrients = NCN)	Target Pollutants	Assessment Method (Completion Confirmation = CC; Tabulation = T; Surveys = S; Inspections/ Observations = IO)	Assessment Measure
	Convey messages to explain the benefits of water-efficient and stormwater-friendly landscaping and the Model Water Efficient Landscape Ordinance (MWELO).	The County adopted, implements, and enforces the Model Water Efficient Landscape Ordinance (MWELO) for new development and retrofitted landscape water efficiency standards. This standard encourages the use of more efficient irrigation systems, graywater, and on-site stormwater capture, and limits the use of landscape turf. The County Department of Planning and Building has a Performance-Based Compliance Package (for large projects) and Prescriptive Compliance Documentation (for small projects) that are to be completed by project applicants with the intent of assisting applicants and the County determine project compliance with the MWELO.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	CC	Confirmation of implementation/ completion of MWELO.
	Develop and convey messages specific to reducing illicit discharges with information about how the public can report incidents to the appropriate authorities.	The County maintains a pollution prevention hotline number that is provided on all stormwater-related outreach materials that includes spill detection and reporting procedures.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	CC	Confirmation of implementation/ completion.
	Develop and convey messages specific to proper application of pesticides, herbicides, and fertilizers.	The County provides a link the *Waterwise Landscaping for San Luis Obispo County* website on the Public Works Stormwater *Frequently Asked Questions* webpage. The *Waterwise* webpage includes extensive information about sustainable fertilization, composting, using water wisely, and other actions that can be taken to reduce fertilizer loading in runoff from landscaping.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	CC	Confirmation of implementation/ completion.
	Conduct illicit discharge/illegal connection, construction site runoff, and pollution prevention training for staff.	The County performs annual employee training regarding pollution prevention.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	T, S	Tabulation of number or % employees trained; survey results for those trained.
E.8 Public Involvement and Participation	Involve the public in the development and implementation of activities related to the program.	The County implements public involvement efforts through participation in 'hands-on' regional events, such as Coastal Clean Up Day, and other opportunities that focus on the connection of stormwater quality to the health of local waterways and Watersheds.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	T, S	Tabulation of number of events public involvement was elicited; tabulation of comments/ feedback/ /surveys received during the events.
		The County implements a "Storm Drain Marking" program to repair or replace aging or damaged storm drain markers, which presents an opportunity to renew awareness of the connection from storm drains to local waterways.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	CC	Confirmation of implementation/ completion.

Table 13. BMP Effectiveness Measures for Permit-Required BMPs, Continued

Permit Section	Applicable Permit Requirement	County BMP Implementation	Applicable TMDL (Morro Bay Pathogen = MBP, Morro Bay Sediment = MBS, Nipomo Creek Bacteria = NCB, Nipomo Creek Nutrients = NCN)	Target Pollutants	Assessment Method (Completion Confirmation = CC; Tabulation = T; Surveys = S; Inspections/ Observations = IO)	Assessment Measure
		The County implements an "Adopt-a-Road" program that increases public awareness and participation in trash and pollutant control.	MBP, MBS, NCB	Pathogens, Sediment, Bacteria	CC	Confirmation of implementation/ completion.
E.9 Illicit Discharge Detection and Elimination	Detect, investigate, and eliminate illicit discharges, including illegal dumping, into the MS4.	The County maintains a stormwater hotline for IDDE reporting and response, which is published in outreach materials, their website, and digital media.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	T	Tabulation of number of reports received via the hotline or digital media.
		The County's Certified Unified Program Agency (CUPA) inspectors are trained to detect illicit discharges and follow-up reporting and guidance.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	CC	Confirmation of implementation/ completion.
	Inventory and conduct field sampling to detect illicit discharges in priority areas; conduct source investigation as necessary.	The County will continue to update its GIS database of all County-owned storm drains in the MS4 permit areas. The County conducts an outfall inventory of priority outfalls in Los Osos and field sampling to detect illicit discharges (if required, per the Permit). Source investigations and corrective actions are required for discharges exceeding the Permit's Action Level Concentrations. The County may elect to inventory additional outfalls to document the lack of dry weather flows and, thus, attain dry weather TMDLs.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	CC, IO	Confirmation of implementation/ completion of GIS database update and outfall inventory. Number of inspected/ observed outfalls and % change from previous year.
	Implement a spill response plan.	The County and the public can report spills via Environment Health or Public Works departments. Various County departments respond to different types of spills and collaborate to provide appropriately trained staff in response. The County also maintains associated spill response plans, such as the *Hazardous Materials Response Plan*.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	CC	Confirmation of implementation/ completion.
E.10 Construction Site Runoff Stormwater Runoff Control	Implement and enforce a program to prevent construction site discharges of pollutants and impacts on beneficial uses of receiving waters.	The County provides construction site education and outreach information to 100% of construction sites with Construction General Permit applications.	MBS	Sediment	CC	Confirmation of implementation/ completion.
	Conduct construction site inspections and enforcement.	All permitted construction sites are inspected for erosion and sediment control and stormwater BMPs as part of County procedures.	MBS	Sediment	IO	Number of inspected construction sites and number of escalated enforcement actions; note % change from previous year.

Table 13. BMP Effectiveness Measures for Permit-Required BMPs, Continued

Permit Section	Applicable Permit Requirement	County BMP Implementation	Applicable TMDL (Morro Bay Pathogen = MBP, Morro Bay Sediment = MBS, Nipomo Creek Bacteria = NCB, Nipomo Creek Nutrients = NCN)	Target Pollutants	Assessment Method (Completion Confirmation = CC; Tabulation = T; Surveys = S; Inspections/ Observations = IO)	Assessment Measure
		The County enforces all ordinances, including grading ordinance and compliance with the Construction General Permit. All staff attend annual construction stormwater training.	MBS	Sediment	CC, T, S	Confirmation of implementation/ completion. Tabulation or % of number. of staff trained and results of quiz or survey given.
E.11 Pollution Prevention/Good Housekeeping for Municipal Operations	Maintain an inventory of County owned/operated facilities with potential significant sources of pollution.	The County maintains an inventory of County owned/operated facilities with potential significant sources of pollution.	MBP, MBS, NCP, NCN	Pathogens, Sediment, Bacteria, Nutrients	CC	Confirmation of implementation/ completion.
	Conduct an annual review and assessment of owned/operated facilities to determine their potential to impact surface waters.	The County conducts County-owned/operated facility inspections and maintains checklists used during the inspections.	MBP, MBS, NCP, NCN	Pathogens, Sediment, Bacteria, Nutrients	IO	Number of follow-up actions completed in response to the inspections.
	Maintain high priority storm drain systems on an ongoing schedule.	The County performs routine inspection and cleaning of the storm drain system.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	CC	Confirmation of implementation/ completion.
	Assess County operations and maintenance activities for pollutant discharge potential, including road and parking lot and bridge maintenance.	The County conducts street sweeping. The frequency and effectiveness will be re-evaluated and revised per the Trash Amendments and the County's *Trash Implementation Plan*.	MBS	Sediment	CC	Confirmation of implementation/ completion.
		The County implements several specific Procedural Memorandums as part of the American Public Works Association accreditation program, which include road maintenance and standard operating procedures.	MBS	Sediment	CC	Confirmation of implementation/ completion.
	The County Code Chapter 22.10 contains trash enclosure standards for multi-unit dwellings, commercial, and industrial areas, which are intended to reduce pollution from trash receptacles. It also requires grease traps for all food service establishments and requires they are maintained.	The County implements these standards on all new developments and verifies compliance during the construction permit review process.	MBP, NCB, NCN	Pathogens, Bacteria, Nutrients	CC	Confirmation of implementation/ completion.

Table 13. BMP Effectiveness Measures for Permit-Required BMPs, Continued

Permit Section	Applicable Permit Requirement	County BMP Implementation	Applicable TMDL (Morro Bay Pathogen = MBP, Morro Bay Sediment = MBS, Nipomo Creek Bacteria = NCB, Nipomo Creek Nutrients = NCN)	Target Pollutants	Assessment Method (Completion Confirmation = CC; Tabulation = T; Surveys = S; Inspections/ Observations = IO)	Assessment Measure
E.12 Post-Construction Stormwater Management	Regulate development to comply with the PCRs.	The County is actively implementing the PCRs and annually reports the number of projects with PCRs. The PCRs have been adopted into the County's Land Use ordinance and Building Standards. These standards are reviewed and updated biennially.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	CC	Confirmation of implementation/ completion.
		The County implements its *Stormwater LID Handbook* (2017) that includes regulatory requirements, directions on how to complete the permit application, and site design strategies and measures. The County plans to revise the handbook into an improved technical guide in the future.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	CC	Confirmation of implementation/ completion.
	Implement an Operations and Maintenance Verification Program for stormwater treatment and baseline hydromodification management structural control measures.	The County implements an Operations and Maintenance Verification Program for stormwater treatment and structural control measures.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	CC	Confirmation of implementation/ completion.

Table 15. BMP Effectiveness Measures for Additional BMPs Used to Calculate Load Reductions

Permit Section	County BMP Implementation	Applicable TMDL (Morro Bay Pathogen = MBP, Morro Bay Sediment = MBS, Nipomo Creek Bacteria = NCB, Nipomo Creek Nutrients = NCN)	Target Pollutants	Assessment Method (Completion Confirmation = CC; Tabulation = T; Surveys = S; Inspections/ Observations = IO)	Assessment Measure
Animal Facilities Management	The County is currently designing and constructing a new Animal Services Facility in the Morro Bay Watershed that will have state-of-the-art cleaning, plumbing, and mechanical systems.	MBP	Pathogens	CC	Confirmation of implementation/ completion.
	The County implements Title 22, Land Use Standard, Chapter 22.30.090 *Animal Keeping and Animal Facilities Standards*, which limits the number of animals and has specifications for maintenance and operations, including erosion and sediment control and vector control. Additionally, the Environmental Health Services Division reviews manure management plans for facilities with a significant number or density of livestock.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	CC	Confirmation of implementation/ completion.
Commercial/Industrial Inspections	The County Environmental Health Services Division performs inspections of commercial restaurant and industrial food processing facilities within County MS4 annually, which include stormwater-related observations. The inspectors are trained in pollution prevention and illicit discharge detection. Their enforcement procedures include re-inspection and follow-up. The County's website provides directions for the public to file complaints with Environmental Health Services for observations of pollutant releases from restaurants and businesses. The County CUPA performs inspections of hazardous materials areas and the County has adopted codes related to prohibitions of discharges from grease traps, trash enclosures, and other sources (Title 8, Title 22).	MBP, NCB	Pathogens, Bacteria	CC	Confirmation of implementation/ completion.
Water Conservation	The County will continue to support existing education and outreach programs regarding water conservation, reducing dry-weather flows from irrigation, and using drought-resistant landscaping.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	CC	Confirmation of implementation/ completion.
Dry-Weather MS4 Inspection Program	The County conducts outfall monitoring in priority areas. The County may elect to expand its currently-implemented MS4 Outfall Inventory and Field Sampling Program to include non-priority outfall dry weather inspections to verify the lack of flow and, therefore, attainment with dry weather WLAs.	MBP, MBS, NCB, NCN	Pathogens, Sediment, Bacteria, Nutrients	CC	Confirmation of implementation/ completion.

Table 14. BMP Effectiveness Measures for Additional BMPs Used to Calculate Load Reductions, Continued

Permit Section	County BMP Implementation	Applicable TMDL (Morro Bay Pathogen = MBP, Morro Bay Sediment = MBS, Nipomo Creek Bacteria = NCB, Nipomo Creek Nutrients = NCN)	Target Pollutants	Assessment Method (Completion Confirmation = CC; Tabulation = T; Surveys = S; Inspections/ Observations = IO)	Assessment Measure
Encampment Management	The County developed a mobile application, the Transient Encampment Mapping Application (TEMP App), to track the locations, size, and status of transient encampments. The TEMP App will help peace officers and service providers locate encampments and provide focused outreach. It will also support the multiple jurisdictions that are involved in encampment sanitation, cleanup, and removal efforts.	MBP, NCB	Pathogens, Bacteria	CC	Confirmation of implementation/ completion.
	The County anticipates developing Encampment Cleanup Best Practice procedures to ensure safe, consistent, and lawful cleanups are conducted. These cleanups typically require collaboration across multiple departments and jurisdictions and are costly and logistically challenging.				
	The County is exploring a pilot program to enable more regular trash removal from sites where encampments are consistently present.				

Table 16. BMP Effectiveness Measures for Additional TMDL-required BMPs

Permit Section	County BMP Implementation	Applicable TMDL (Morro Bay Pathogen = MBP, Morro Bay Sediment = MBS, Nipomo Creek Bacteria = NCB, Nipomo Creek Nutrients = NCN)	Target Pollutants	Assessment Method (Completion Confirmation = CC; Tabulation = T; Surveys = S; Inspections/ Observations = IO)	Assessment Measure
Septic System Maintenance	The County performs septic inspections and monitoring per the County's Local Agency Management Program.	MBP, NCB, NCN	Pathogens, Bacteria, Nutrients	CC	Confirmation of implementation/ completion.
	The County regularly audits wastewater facilities and processes through operational permits.				
	The County continues to inspect and maintain County-owned/operated septic systems.				
	All properties served by OWTS in the prohibition area have been connected to the new Los Osos Water Recycling Facility.				
	County Code Chapter 8.93 prohibits the discharge of "rainwater, stormwater, surface water, groundwater, roof runoff, swimming pool water, sub-surface draining, cooling water or industrial process waters into any sewer."				

A. Quantification of BMP Bacteria Load Reductions

As part of the development of the first iterations of this WAAP, wet and dry weather baseline loads were calculated (Appendix C) and quantitative, modeling-based estimates of load reductions were developed for fecal coliform for each Watershed (Appendix D). The reported values are approximate estimates of a range of BMP load reductions based on simplifying assumptions, limited available data, best professional judgment, and the current state of the practice for TMDL implementation planning quantification for urban stormwater dischargers. These reductions are reported as total annual load (e.g., MPN/year) and percent of "baseline" (or pre-BMP) County MS4 load for an average annual rain year. The Watershed-wide and County MS4 Permit area existing (baseline) pollutant loads (Appendix C) were estimated for bacteria using the rational method and land use-based pollutant concentrations. The wet weather baseline load was established using the average annual precipitation, land use specific runoff coefficients, and land use specific event mean concentrations for fecal coliform. The dry weather MS4 baseline load was calculated from land use-specific dry weather flow rates and bacteria concentrations; however, Watershed-wide dry weather baseline loads were not estimated due to limited dry weather flow rate information.

The first step of the load reduction quantification was to calculate the load generated by the targeted bacteria source that the BMP will address. For many of the BMPs, the targeted bacteria source load was a percentage of the total bacteria baseline load (either wet or dry, depending on what the specific BMP is expected to address), which was established based on urban source tracking studies. If studies establishing a percentage of the total bacteria load from a targeted source were not available, an alternate approach to calculate the targeted bacteria source load was applied based on the amount of bacteria found in targeted source materials and the total quantity of targeted source materials present.

Once the targeted bacteria source load was calculated (Appendix C), the potential load reduction benefit was calculated using the estimated effectiveness of the selected BMP (Appendix D). These values were based on literature when available, otherwise they were based on best professional judgment. In both cases, predicted levels of uncertainty are high, though they represent the state of the practice based on recent Southern California MS4 bacteria TMDL implementation plans and Watershed management plans. The following sections provide a brief description of the specific quantification approach for each additional BMP, along with relevant assumptions and explanations. Load reductions for some BMPs are not as readily quantifiable due to limited data. For example, there is a lack of knowledge about the extent of pollutant loading from homeless encampment sources, animal facilities, and fertilizer use. In such instances, the BMPs addressing these sources were not quantified, but may provide additional load reduction benefit beyond the estimates reported here. The MS4 bacteria load reduction estimates, assumptions, and methods for the additional BMPs included in this WAAP are described in Appendix D.

COMMERCIAL/INDUSTRIAL INSPECTIONS

The portion of the County dry weather fecal coliform load attributed to runoff from commercial areas was estimated using best professional judgment. A San Diego River study (Weston 2009) found that 15-27 percent of dry weather commercial flows are from commercial activities such as dumpster leaks and wash-down (i.e. not from irrigation runoff). The reduction achieved through inspections was based on the rate of inspection coverage and the effectiveness of inspections found in the *San Diego County Jurisdictional Urban Runoff Management Program Annual Report* (County of San Diego 2011).

PET WASTE CONTROL AND PICKUP

To estimate reduction due to the pet waste program, the County's fecal coliform wet weather baseline load was reduced by the percent of bacteria having canine sources (Appendix D). Studies in Austin, TX and San Diego, CA present an estimated behavior change based on the implementation of this BMP.

WATER CONSERVATION

The dry weather loading of fecal coliform from irrigation runoff was determined using the same approach as for commercial activities runoff. The percent of bacteria loading from commercial and residential runoff was estimated using land use specific bacteria concentrations and flow rates, along with best professional judgment. Based on findings from the San Diego River source tracking study (Weston 2009), 59-80 percent of commercial and residential runoff is from irrigation. The implementation of this notification-based BMP is estimated to reduce irrigation runoff from commercial and residential areas by 10 to 20 percent as found by IRWD (2004) in a study in Orange County.

DRY-WEATHER MS4 INSPECTION PROGRAM

This BMP is based on the identification and control of sewer inputs and human wastes into the MS4 during dry weather. The quantification of the County's baseline dry weather load from human sources was divided into two periods: winter dry weather and summer dry weather. This distinction resulted from the findings of the *Lower San Luis Rey Microbial Source Tracking Study* (City of Oceanside, 2011). The *Draft San Luis Rey Comprehensive Load Reduction Plan* (Geosyntec Consultants, 2012) suggests that the percent of fecal bacteria having human sources was 5 to 20 percent during winter dry weather and 1 to 10 percent during summer dry weather. Although human source contributions were estimated for the Morro Bay Watershed (36% for Los Osos Creek and 24% for Chorro Creek) in the Watershed's TMDL, source tracking studies were not used because they do not specifically distinguish between wet and dry weather sources. Though it is believed that the source tracking results reflect dry weather, the uncertainty of the sample dates (wet vs. dry) and method (see Footnote 1 regarding DNA methodology), the more conservative human source percentages from previous findings in San Diego were used in this WAAPs calculations. Based on findings from the *San Diego County Source Prioritization* process (Ruby, 2011), it is estimated that 50-75% of the human bacteria load is contained within the pollutant-generating activities addressed by this BMP. Best professional judgment was then used to estimate a reduction in sewage discharge based on implemented controls. This reduction rate was then applied to the annual estimated human sewage bacteria load to calculate a total reduction of the County's MS4 bacteria baseline load.

Another recent source tracking study in San Diego found that between 30-35% of outfalls were flowing during dry weather investigations (Geosyntec Consultants, 2014). Approximately 20-25% of the flowing outfalls test positive for a human marker. The outfalls that were positive for human markers were investigated and potential sources were identified.

LOAD REDUCTION SUMMARY FOR MODELED BMPS

The County has judiciously chosen BMPs that are believed to be the most effective and efficient source control strategies to reduce pollutant loading and meet the TMDL WLAs, as feasible. The BMP selection and prioritization processes, which were described previously, were also based on an understanding of prioritized pollutant sources within the County MS4 area. Given the fact that many of these BMPs are source control-type BMPs for which little performance monitoring data are published, it is difficult to

quantitatively estimate expected performance (e.g., load reductions resulting from source control implementation). However, in an effort to quantitatively estimate the impact of the County BMP Program on bacteria loading in the targeted Watersheds, a quantitative assessment was carried out, as described in this Section. This assessment was based on published estimates of non-structural BMP performance. The results can be found in Appendices C and D. A summary of estimated MS4 load reductions is provided in Table 16.

Table 17. Summary of MS4 Load Reductions

Waterbody	Percent of Watershed Load from County's MS4[1]	Average Annual Wet Weather MS4 Load Reduction		Average Annual Dry Weather MS4 Load Reduction	
		Fecal Coliform Per Year (10^12 MPN)	Percent Reduction of County's MS4 Load	Fecal Coliform Per Year (10^12 MPN)	Percent Reduction of County's MS4 Load
Morro Bay	11%	5.5 - 82	0.5% to 7%	0.026 - 0.15	3.3% to 19%
Nipomo Creek	9%	1.1 - 17	0.4% to 7%	0.01 - 0.04	3% to 19%

Notes:
1 The percent of the Watershed areas within the County MS4 areas are about the same as the percent of the Watershed load from the County's MS4 load.
MPN – most probably number
MS4 – municipal separate storm sewer system

VIII. Adaptive Management

The MS4 Permit Attachment G (Appendix A) requires the County to annually assess this WAAP and the overall TMDL program using methods described in the CASQA *Municipal Stormwater Program Effectiveness Assessment Guide* in order to determine if the program needs to be modified to improve upon BMPs determined to be ineffective (i.e., adaptive management). The WAAP adaptive management approach for the County MS4 Permit area is designed to address the WAAP planning process and the relationship between monitoring, scheduling, and BMP planning. The adaptive management process outlines how the WAAP will be modified in response to monitoring results, special studies, and lessons learned from BMP implementation. It is designed to accomplish three goals:

1. Clarify the short-term and long-term commitments of the County within the WAAP.
2. Provide a structured decision-making process for modifications to the WAAP based on the results of monitoring data.
3. Propose a structure for evaluating compliance with water-quality based Permit requirements within an adaptive structure.

The BMPs identified in this WAAP have been designed around meeting the interim and final WLAs through one or multiple of the proposed compliance pathways. While the WAAP identifies actions that will lead to compliance with the final TMDL WLAs, the specific actions taken will be informed by monitoring data collected under the monitoring program, special studies that may be conducted during implementation, and any applicable regulatory changes that could influence the remaining interim and final milestones and schedule. For example, bacteria are prevalent throughout these Watersheds including numerous natural, non-anthropogenic, non-MS4 sources. Therefore, the County may consider options to perform special studies to evaluate the bacteria WLAs. Through the adaptive management process, the

WAAP may be reevaluated after any changes to the statewide objectives, TMDL WLAs, and/or Permit limits.

Monitoring data will be utilized to measure progress towards achieving WLAs. An evaluation of monitoring data will be carried out on an annual basis to determine if modifications to the WAAP are necessary. Modifications that are warranted because final WLAs are achieved more quickly than anticipated can be made at any time (i.e. no more actions are needed if fewer control measures result in meeting WLAs). Modifications that are warranted because insufficient progress is being made will be addressed in the annual report and a schedule for additional BMP implementation will be provided.

If at any point during the implementation period the pertinent water quality objectives are modified in response to a regulatory action, TMDL modification, or local studies, the receiving water and outfall sampling data will be compared to the new water quality objectives. The same procedure will be followed for evaluating the data and adapting the WAAP, but the new objectives will be used for the analysis. This adaptive management process applies during the implementation period for this WAAP. At the end of the implementation period, if the final WLAs are not being met, the County will coordinate with the Central Coast Water Board regarding approaches to extending the compliance deadlines, including Central Coast Basin Plan amendments (BPAs) to revise the TMDL implementation schedules, time schedule orders (TSOs), or a combination of BPAs and TSOs. Ultimately, the milestones and schedules specified in this WAAP will be modified accordingly.

IX. Reporting

The County must submit annual reports to the Central Coast Water Board by October 15th of each year as directed under the Permit. This report will summarize the activities performed for the reporting period (currently July 1 – June 30). Each report will include:

- The status of compliance with Permit Attachment G conditions;
- An assessment of the appropriateness and effectiveness of the identified BMPs to demonstrate adequate progress towards attainment of WLAs according to the TMDL schedule;
- The results of information collected and analyzed, including analysis of monitoring data and results of the dry weather outfall monitoring survey during the reporting period;
- A summary of the BMP activities the County plans to undertake during the next reporting cycle; and
- A summary of any meetings or other correspondence that the County has had with Central Coast Water Board staff and other stakeholders regarding progress on the TMDLs.

X. Coordination

The County will continue its cooperation with Federal, State, and local agencies and non-profit organizations to implement this WAAP. Monitoring efforts will be coordinated with the MBNEP and reported to the Central Coast Water Board. The County will collaborate as needed with other agencies or organizations to gather data in order to track the effectiveness of each BMP, with the end goal of attaining TMDL objectives. As necessary, meetings will be held with agencies, stakeholders, and the public to ensure that progress is being made toward WAAP objectives.

XI. References

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Appendix A

Applicable Excerpts from the Draft Phase II Small MS4 General Permit - Attachment G

ATTACHMENT G – Region-Specific Requirements
Regional Water Board-Approved TMDLs with urban runoff listed as a source

TMDL Effective Date Basin Plan Amendment (BPA) Water Board Resolution No.	Phase II Entities	Impaired Water Body	Deliverables/Actions Required
Region 3: Central Coast Regional Water Board			
TMDL and Implementation Plan for Morro Bay and Chorro and **Los Osos Creeks** *Pathogens* Effective Date: 11/19/2003 BPA: Chapter 4 Resolution No. R3-2003-0060	City of Morro Bay County of San Luis Obispo	Morro Bay Chorro Creek Los Osos Creek Pennington Creek Warden Creek	**Requirements for Implementing the TMDL** By January 1, 2019, the Phase II entities identified in this TMDL section (hereafter referred to in this TMDL section as "the MS4") shall each implement a Wasteload Allocation Attainment Program that identifies the actions they will take to attain their wasteload allocations. The Wasteload Allocation Attainment Programs shall include: 1. A detailed description of the strategy the MS4 will use to guide BMP selection, assessment, and implementation, to ensure that BMPs implemented will be effective at abating pollutant sources, reducing pollutant discharges, and achieving wasteload allocations according to the TMDL schedule. 2. Identification of sources of the impairment within the MS4's jurisdiction, including specific information on various source locations and their magnitude within the jurisdiction. 3. Prioritization of sources within the MS4's jurisdiction, based on suspected contribution to the impairment, ability to control the source, and other pertinent factors. 4. Identification of BMPs that will address the sources of impairing pollutants and reduce the discharge of impairing pollutants. 5. Prioritization of BMPs, based on suspected effectiveness at abating sources and reducing impairing pollutant discharges, as well as other pertinent factors. 6. Identification of BMPs the MS4 will implement, including a detailed implementation schedule. For each BMP, identify milestones the MS4 will use for tracking implementation, measurable goals the 7. MS4 will use to assess implementation efforts, and measures and targets the MS4 will use to assess effectiveness. MS4s shall include expected BMP implementation for future implementation years, with the understanding that future BMP implementation plans may change as new information is obtained. 8. A quantifiable numeric analysis that uses published BMP pollutant removal estimates, performance estimates, modeling, best professional judgment, and/or other available tools to demonstrate that the BMP selected for implementation achieved the MS4's wasteload allocation. This analysis will most likely incorporate modeling efforts. The MS4 shall conduct repeat numeric analyses as the BMP implementation plans evolve and information on BMP effectiveness is generated. Once the MS4 has water quality data from its monitoring program, the MS4 shall incorporate water quality data into the numeric analyses to validate BMP implementation plans.

ATTACHMENT G – Region-Specific Requirements
Regional Water Board-Approved TMDLs with urban runoff listed as a source

TMDL Effective Date Basin Plan Amendment (BPA) Water Board Resolution No.	Phase II Entities	Impaired Water Body	Deliverables/Actions Required
Region 3: Central Coast Regional Water Board			
TMDL and Implementation Plan for Morro Bay and Chorro and Los Osos Creeks *Pathogens* (Continued)			9. A detailed description, including a schedule, of a monitoring program the MS4 will implement to assess discharge and receiving water quality, BMP effectiveness, and progress towards any interim targets and ultimate attainment of the MS4's wasteload allocation. The monitoring program shall be designed to validate BMP implementation efforts and quantitatively demonstrate attainment interim targets and wasteload allocations. 10. If the approved TMDL does not explicitly include interim targets, the MS4 shall establish interim targets (and dates when stormwater discharge conditions will be evaluated) that are equally spaced in time over the TMDL attainment schedule and represent measurable, continually decreasing MS4 discharge concentrations or other appropriate interim measures of pollution reduction and progress towards the wasteload allocation. Where TMDL attainment schedules have passed, but Wasteload Allocations have not been achieved by January 1, 2019, the MS4 shall consult with the Regional Water Board to establish dates to meet new interim targets and to achieve wasteload allocations. At least one interim target and date must occur during the five years commencing on January 1, 2019. The MS4 shall achieve its interim targets by the date it specifies in the Wasteload Allocation Attainment Program. If the MS4 does not achieve its interim target by the date specified, the MS4 shall develop and implement more effective BMPs that it can quantitatively demonstrate will achieve the next interim target. 11. A detailed description of how the MS4 will assess BMP and program effectiveness. The description shall incorporate the assessment methods described in the CASQA Municipal Storm Water Program Effectiveness Assessment Guide. 12. A detailed description of how the MS4 will modify the program to improve upon BMPs determined to be ineffective during the effectiveness assessment. 13. A detailed description of information the MS4 will include in annual reports to demonstrate adequate progress towards attainment of wasteload allocations according to the TMDL schedule.

ATTACHMENT G – Region-Specific Requirements
Regional Water Board-Approved TMDLs with urban runoff listed as a source

TMDL Effective Date Basin Plan Amendment (BPA) Water Board Resolution No.	Phase II Entities	Impaired Water Body	Deliverables/Actions Required
Region 3: Central Coast Regional Water Board			
TMDL for Morro Bay (including Chorro Creek, Los Osos Creek, and the Morro Bay Estuary) *Sediment* Effective Date: 12/3/2003 BPA: Chapter 4 Resolution No. R3-2002-0051	County of San Obispo	Morro Bay Los Osos Creek Chorro Creek Dairy Creek Pennington Creek Warden Creek	**Requirements for Implementing the TMDL** By January 1, 2019, the County of San Luis Obispo shall implement practices that will assure their allocation is achieved, including identifying and implementing specific road sediment control measures. The County of San Luis Obispo (hereafter referred to in this TMDL section as "the MS4") shall implement a Wasteload Allocation Attainment Program that identifies the actions it will take to attain its wasteload allocation. The Wasteload Allocation Attainment Program shall include: 1. A detailed description of the strategy the MS4 will use to guide BMP selection, assessment, and implementation, to ensure that BMPs implemented will be effective at abating pollutant sources, reducing pollutant discharges, and achieving wasteload allocations according to the TMDL schedule. 2. Identification of sources of the impairment within the MS4's jurisdiction, including specific information on various source locations and their magnitude within the jurisdiction. 3. Prioritization of sources within the MS4's jurisdiction, based on suspected contribution to the impairment, ability to control the source, and other pertinent factors. 4. Identification of BMPs that will address the sources of impairing pollutants and reduce the discharge of impairing pollutants. 5. Prioritization of BMPs, based on suspected effectiveness at abating sources and reducing impairing pollutant discharges, as well as other pertinent factors. 6. Identification of BMPs the MS4 will implement, including a detailed implementation schedule. For each BMP, identify milestones the MS4 will use for tracking implementation, measurable goals the MS4 will use to assess implementation efforts, and measures and targets the MS4 will use to assess effectiveness. MS4s shall include expected BMP implementation for future implementation years, with the understanding that future BMP implementation plans may change as new information is obtained. 7. A quantifiable numeric analysis that uses published BMP pollutant removal estimates, performance estimates, modeling, best professional judgment, and/or other available tools to demonstrate that the BMP selected for implementation will likely achieve the MS4's wasteload allocation by the schedule identified in the TMDL. This analysis will most likely incorporate modeling efforts. The MS4 shall conduct repeat numeric analyses as the BMP implementation plans evolve and information on BMP effectiveness is generated. Once the MS4 has water quality data from its monitoring program, the MS4 shall incorporate water quality data into the numeric analyses to validate BMP implementation plans. **8.** A detailed description, including a schedule, of a monitoring program the MS4 will implement to assess discharge and receiving water quality, BMP effectiveness, and progress towards any interim targets and ultimate attainment of the MS4s' wasteload allocation. The monitoring program shall be designed to validate BMP implementation efforts and quantitatively demonstrate attainment of interim targets and wasteload allocations.

ATTACHMENT G – Region-Specific Requirements
Regional Water Board-Approved TMDLs with urban runoff listed as a source

TMDL Effective Date Basin Plan Amendment (BPA) Water Board Resolution No.	Phase II Entities	Impaired Water Body	Deliverables/Actions Required
Region 3: Central Coast Regional Water Board			
TMDL for Morro Bay (including Chorro Creek, Los Osos Creek, and the Morro Bay Estuary) *Sediment* (Continued)			9. If the approved TMDL does not explicitly include interim targets, the MS4 shall establish interim targets (and dates when stormwater discharge conditions will be evaluated) that are equally spaced in time over the TMDL attainment schedule and represent measurable, continually decreasing MS4 discharge concentrations or other appropriate interim measures of pollution reduction and progress towards the wasteload allocation. At least one interim target and date must occur during the first five years commencing on January 1, 2019. The MS4 shall achieve its interim targets by the date it specifies in the Wasteload Allocation Attainment Program. If the MS4 does not achieve its interim target by the date specified, the MS4 shall develop and implement more effective BMPs that it can quantitatively demonstrate will achieve the next interim target. 10. A detailed description of how the MS4 will assess BMP and program effectiveness. The description shall incorporate the assessment methods described in the CASQA Municipal Storm Water Program Effectiveness Assessment Guide. 11. A detailed description of how the MS4 will modify the program to improve upon BMPs determined to be ineffective during the effectiveness assessment. 12. A detailed description of information the MS4 will include in annual reports to demonstrate adequate progress towards attainment of wasteload allocations according to the TMDL schedule. 13. A detailed description of how the MS4 will collaborate with other agencies, stakeholders, and the public to develop and implement the Wasteload Allocation Attainment Program. 14. Any other items identified by Integrated Report fact sheets, TMDL Project Reports, TMDL Resolutions, or that are currently being implemented by the MS4 to control its contribution to the impairment.

ATTACHMENT G – Region-Specific Requirements
Regional Water Board-Approved TMDLs with urban runoff listed as a source

TMDL Effective Date Basin Plan Amendment (BPA) Water Board Resolution No.	Phase II Entities	Impaired Water Body	Deliverables/Actions Required
Region 3: Central Coast Regional Water Board			
TMDLs for the Santa Maria River Watershed *Fecal Indicator Bacteria* Effective Date: 2/21/2013 BPA: Chapter 4 Resolution No. R3-2012-0055	City of Guadalupe County of San Luis Obispo County of Santa Barbara City of Santa Maria	Water Bodies in the Santa Maria River Watershed, including: Blosser Channel Bradley Channel Main Street Canal Nipomo Creek Orcutt Creek Santa Maria River Estuary Santa Maria River	**Requirements for Implementing the TMDL** By January 1, 2019, the Phase II entities identified in this TMDL section (hereafter referred to in this TMDL section as "the MS4") shall each develop, submit, and begin implementation of a Wasteload Allocation Attainment Program, or an integrated plan, that identifies the actions they will take to attain their wasteload allocations. The Wasteload Allocation Attainment Programs or integrated plans shall include: 1. A detailed description of the strategy the MS4 will use to guide BMP selection, assessment, and implementation, to ensure that BMPs implemented will be effective at abating pollutant sources, reducing pollutant discharges, and achieving wasteload allocations according to the TMDL schedule. 2. Identification of sources of the impairment within the MS4's jurisdiction, including specific information on various source locations and their magnitude within the jurisdiction. 3. Prioritization of sources within the MS4's jurisdiction, based on suspected contribution to the impairment, ability to control the source, and other pertinent factors. 4. Identification of BMPs that will address the sources of impairing pollutants and reduce the discharge of impairing pollutants. 5. Prioritization of BMPs, based on suspected effectiveness at abating sources and reducing impairing pollutant discharges, as well as other pertinent factors. 6. Identification of BMPs the MS4 will implement, including a detailed implementation schedule. For each BMP, identify milestones the MS4 will use for tracking implementation, measurable goals the MS4 will use to assess implementation efforts, and measures and targets the MS4 will use to assess effectiveness. MS4s shall include expected BMP implementation for future implementation years, with the understanding that future BMP implementation plans may change as new information is obtained. 7. A quantifiable numeric analysis that uses published BMP pollutant removal estimates, performance estimates, modeling, best professional judgment, and/or other available tools to

ATTACHMENT G – Region-Specific Requirements

Regional Water Board-Approved TMDLs with urban runoff listed as a source

TMDL Effective Date Basin Plan Amendment (BPA) Water Board Resolution No.	Phase II Entities	Impaired Water Body	Deliverables/Actions Required
Region 3: Central Coast Regional Water Board			
TMDLs for the Santa Maria River Watershed *Fecal Indicator Bacteria* (Continued)			demonstrate that the BMP selected for implementation will likely achieve the MS4's wasteload allocation by the schedule identified in the TMDL. This analysis will most likely incorporate modeling efforts. The MS4 shall conduct repeat numeric analyses as the BMP implementation plans evolve and information on BMP effectiveness is generated. Once the MS4 has water quality data from its monitoring program, the MS4 shall incorporate water quality data into the numeric analyses to validate BMP implementation plans. 8. A detailed description, including a schedule, of a monitoring program the MS4 will implement to assess discharge and receiving water quality, BMP effectiveness, and progress towards any interim targets and ultimate attainment of the MS4s' wasteload allocations. The monitoring program shall be designed to validate BMP implementation efforts and quantitatively demonstrate attainment of interim targets and wasteload allocations. 9. The MS4 shall establish interim targets (and dates when stormwater discharge conditions will be evaluated) that are equally spaced in time over the TMDL attainment schedule and represent measurable, continually decreasing MS4 discharge concentrations or other appropriate interim measures of pollution reduction and progress towards the wasteload allocation. At least one interim target and date must occur during the first five years commencing on January 1, 2019. The MS4 shall achieve its interim targets by the date it specifies in the Wasteload Allocation Attainment Program. If the MS4 does not specify interim targets as described above in its Wasteload Allocation Attainment Program, the interim targets identified in the TMDL apply. If the MS4 does not achieve any interim target by the date specified, the MS4 shall develop and implement more effective BMPs that it can quantitatively demonstrate will achieve the next interim target. 10. A detailed description of how the MS4 will assess BMP and program effectiveness. The description shall incorporate the assessment methods described in the CASQA Municipal Storm Water Program Effectiveness Assessment Guide. 11. A detailed description of how the MS4 proposes to assess its attainment of interim targets and the final wasteload allocation. 12. A detailed description of how the MS4 will modify the program to improve upon BMPs determined to be ineffective during the effectiveness assessment. 13. A detailed description of information the MS4 will include in annual reports to demonstrate adequate progress towards attainment of wasteload allocations according to the TMDL schedule. 14. A detailed description of how the MS4 will collaborate with other agencies, stakeholders, and the public to develop and implement the Wasteload Allocation Attainment Program or integrated plan. 15. Any other items identified by Integrated Report fact sheets, TMDL Project Reports, TMDL Resolutions, or that are currently being implemented by the MS4 to control its contribution to the impairment, including public education and participation items identified above. By February 21, 2028, the permittees shall demonstrate attainment of the TMDL WLA as specified in Section E.15.a.(ii). or F.5.i.1.(ii). of this Order.

ATTACHMENT G – Region-Specific Requirements
Regional Water Board-Approved TMDLs with urban runoff listed as a source

TMDL Effective Date Basin Plan Amendment (BPA) Water Board Resolution No.	Phase II Entities	Impaired Water Body	Deliverables/Actions Required
Region 3: Central Coast Regional Water Board			
TMDLs for the Lower Santa Maria River Watershed and Tributaries to Oso Flaco Lake *Nitrogen Compounds and Orthophosphate* Effective Date: 5/22/2014 BPA: Chapter 4 Resolution No. R3-2013-0013	City of Guadalupe County of San Luis Obispo County of Santa Barbara	Water Bodies in the Lower Santa Maria River Watershed and Tributaries to Oso Flaco Lake, including: Blosser Channel Bradley Channel Greene Valley Creek Main Street Canal North Main Street Channel Orcutt Creek Nipomo Creek Santa Maria River Santa Maria River Estuary	**Requirements for Implementing the TMDL** By January 1, 2019, the Phase II entities identified in this TMDL section (hereafter referred to in this TMDL section as "the MS4") shall each develop, submit, and begin implementation of a Wasteload Allocation Attainment Program, or an integrated plan, that identifies the actions they will take to attain their wasteload allocations. The Wasteload Allocation Attainment Programs or integrated plans shall include: 1. A detailed description of the strategy the MS4 will use to guide BMP selection, assessment, and implementation, to ensure that BMPs implemented will be effective at abating pollutant sources, reducing pollutant discharges, and achieving wasteload allocations according to the TMDL schedule. **0.** Identification of sources of the impairment within the MS4's jurisdiction, including specific information on various source locations and their magnitude within the jurisdiction. **1.** Prioritization of sources within the MS4's jurisdiction, based on suspected contribution to the impairment, ability to control the source, and other pertinent factors. 2. Identification of BMPs that will address the sources of impairing pollutants and reduce the discharge of impairing pollutants. 3. Prioritization of BMPs, based on suspected effectiveness at abating sources and reducing impairing pollutant discharges, as well as other pertinent factors. 4. Identification of BMPs the MS4 will implement, including a detailed implementation schedule. For each BMP, identify milestones the MS4 will use for tracking implementation, measurable goals the MS4 will use to assess implementation efforts, and measures and targets the MS4 will use to assess effectiveness. MS4s shall include expected BMP implementation for future implementation years, with the understanding that future BMP implementation plans may change as new information is obtained. 5. A quantifiable numeric analysis that uses published BMP pollutant removal estimates, performance estimates, modeling, best professional judgment, and/or other available tools to demonstrate that the BMP selected for implementation will likely achieve the MS4's wasteload allocation by the schedule identified in the TMDL. This analysis will most likely incorporate modeling efforts. The MS4 shall conduct repeat numeric analyses as the BMP implementation plans evolve and information on BMP effectiveness is generated. Once the MS4 has water quality data from its monitoring program, the MS4 shall incorporate water quality data into the numeric analyses to validate BMP implementation plans. 6. A detailed description, including a schedule, of a monitoring program the MS4 will implement to assess discharge and receiving water quality, BMP effectiveness, and progress towards any interim targets and ultimate attainment of the MS4s' wasteload allocations. The monitoring program shall be designed to validate BMP implementation efforts and quantitatively demonstrate attainment of interim and final wasteload allocations.

ATTACHMENT G – Region-Specific Requirements

Regional Water Board-Approved TMDLs with urban runoff listed as a source

TMDL Effective Date Basin Plan Amendment (BPA) Water Board Resolution No.	Phase II Entities	Impaired Water Body	Deliverables/Actions Required
Region 3: Central Coast Regional Water Board			
TMDL for the Lower Santa Maria River Watershed and Tributaries to Oso Flaco Lake *Nitrogen Compounds and Orthophosphate* (Continued)			9. A detailed description of how the MS4 will assess BMP and program effectiveness. The description shall incorporate the assessment methods described in the CASQA Municipal Storm Water Program Effectiveness Assessment Guide. 10. A detailed description of how the MS4 proposes to assess its attainment of interim targets and the final wasteload allocation. 11. A detailed description of how the MS4 will modify the program to improve upon BMPs determined to be ineffective during the effectiveness assessment. 12. A detailed description of information the MS4 will include in annual reports to demonstrate adequate progress towards attainment of wasteload allocations according to the TMDL schedule. 13. A detailed description of how the MS4 will collaborate with other agencies, stakeholders, and the public to develop and implement the Wasteload Allocation Attainment Program or integrated plan. 14. Any other items identified by Integrated Report fact sheets, TMDL Project Reports, TMDL Resolutions, or that are currently being implemented by the MS4 to control its contribution to the impairment, including public education and participation items identified above. Waste load allocations will be achieved through implementation of management practices and strategies to reduce Nitrogen compound and Orthophosphate loading. Implementation can be conducted by MS4s specifically and/or through statewide programs addressing urban water pollution. The MS4 shall achieve its interim wasteload allocations as specified in the Fact Sheet. If the MS4 does not achieve any interim wasteload allocation by the date specified, the MS4 shall develop and implement more effective BMPs that it can quantitatively demonstrate will achieve the next interim or final wasteload allocations. By May 22, 2044, the permittees shall demonstrate attainment of the TMDL WLA as specified in Section E.15.a.(ii). or F.5.i.1.(ii). of this Order.

Appendix B

Guidance Document / Permit BMP Cross-Reference Table

Table B-1. Guidance Document / Permit BMP Cross-Reference Table

	Historic Guidance Doc BMP ID	Historic Guidance Document Measurable Goals and Outcomes	Current Implementation, as per the 2018 PEIAP	POC Addressed	County Implementers
Public Education	**PE-05.A**	Incorporate residential households located in the permit coverage area in the County CBSM strategy.	The updated County CBSM strategy is now specific to the Trash Implementation Plan[1] and targets applicable audiences and reach. Certain activities conducted by residents that could be a source of pathogens, such as illicit discharges and maintaining pets are targeted with public education and outreach described herein.	Pathogens	Public Works
	PE-05.B	Post water pollution and water quality information on the Public Works website, including Illicit Discharge.	This BMP is required by Permit Section E.8. The County conducts an annual review of the stormwater information on County web pages, as needed to meet requirements of the Permit.	All	Public Works
	PE-06.A	Incorporate restaurants, automobile services, mobile cleaners, contractors, and landscape and property management operations located in the Permit coverage area in the County CBSM strategy, as appropriate. Topics that may be included: General stormwater pollution prevention information about the impacts of urban runoff and the distinction between municipal storm sewer and sanitary sewer systems, etc.	The updated County CBSM strategy is now specific to the Trash Implementation Plan and targets applicable audiences and reach. Commercial/industrial and construction pollutant sources are	All	Public Works
	PE-06.B	Post water pollution and water quality information relative to the CBSM strategy on County website.	This BMP is required by Permit E.7.b.2 b.i and E.7.b.2.ii. The County continues to distribute stormwater educational materials to construction site operators.	All	Public Works
	PE-08.A	Distribute stormwater pollution prevention educational materials, including Illicit Discharge Detection and Elimination information, targeting the development community and construction industry including construction site owners and operators and contractors to every applicant for projects one acre or more in size in the Permit coverage areas.	This BMP is required by Permit Section E.7.b.2 b.i and E.7.b.2.ii. The County continues to distribute stormwater educational materials to construction site operators.	All	Department of Planning and Building
	PE-08.B	Post stormwater pollution education information, including Illicit Discharge Detection and Elimination information and construction and post construction requirements for projects on the County website.	This BMP is required by Permit Section E.8. County conducts an annual review of the stormwater information on County web pages, as needed to meet requirements of the Permit.	All	Public Works
	PE-10.A	Continue education effort through the in-classroom presentation program that follows the California Science Curriculum and Common Core requirements.	The County continues to support in-classroom presentations that follow the California Science Curriculum and Common Core Requirements. The County leverages the development of new programs by the Integrated Waste Management Authority to emphasize trash and litter impacts to the environment.	All	Public Works
	PE-12.A	Incorporate hotels and tourist attractions located in the coverage area in the CBSM strategy as appropriate.	The updated CBSM strategy and Trash Implementation Plan will include hotels and tourist attractions.	All	Public Works
	PE-17.A	Provide a Stormwater Pollution Prevention Telephone Information Line for the public to get more information and a Pollution Reporting Hotline to report stormwater pollution problems.	The County continues to provide the pollution prevention hotline number on all stormwater- related outreach materials.	All	Public Works
	PE-17.B	Include telephone numbers in published Stormwater information and website.	The County continues to provide the pollution prevention hotline number on all stormwater related outreach materials.	All	Environmental Health Division of the County Health Agency
	PE-18.A	Provide educational materials and mutt mitt stations in all County Parks in the Permit coverage areas.	Mutt mitts dispensers are installed and will continue to be maintained. County Parks will post educational material at kiosks and track the number of Mutt Mitts provided on an annual basis.	Pathogens	County Parks, Central Services
	PE-18.B	Continue enforcement of the Stormwater Discharge Ordinance, including violations of proper pet waste management.	The County continues to enforce the Stormwater Discharge Ordinance.	Pathogens	Animal Services Division of the County Health Agency

Table B-1. Guidance Document / Permit BMP Cross-Reference Table, Continued

	Historic Guidance Doc BMP ID	Historic Guidance Document Measurable Goals and Outcomes	Current Implementation, as per the 2018 PEIAP	POC Addressed	County Implementers
	PE-18.C	Provide pet waste management reminders including website addresses, to pet owners via license renewals or other contacts	The County provides pet waste management information to the public via the Animal Services shelters, Woods Humane society, within County Parks and at public events focused on pets or pet health. The County tracks the number of pet waste reminders and brochures distributed through these venues.	Pathogens	Public Works
	PE-18.E	Provide education materials to animal shelters, pet stores, veterinarian offices and farm supply stores in Permit coverage areas, including the San Luis Obispo County Animal Services Facility	The County continues to provide pet-waste related education materials.	Pathogens	Public Works
	PE-18.F	Update pet waste management public education information as available on the County website.	The County biennially updates pet waste management public education information on its website.	Pathogens	Public Works
	PE-18.G	Incorporate information as available and appropriate about organizations and programs that promote pet health and recreation.	The County has discontinued this BMP, as it was found to be ineffective.	Pathogens	Public Works
Illicit Discharge Detection and Elimination	**IL-01.A**	Enforce the "County of San Luis Obispo Stormwater Pollution Prevention and Discharge Control Ordinance" (County Health and Safety Code Section 8.68).	This BMP is a requirement of Permit Sections E.6.a and E.6.b. The County's Stormwater Enforcement Response Plan (2019) describes this protocol.	All	Public Works, Stormwater Coordinator Planning and Building Department Environmental Health Division of the County Health Agency
	IL-04.A	Continue enforcement and penalties for illicit connections and discharges	This BMP is a requirement of Permit Sections E.9.d and E.6.c. The County's Stormwater Enforcement Response Plan (2019) describes this protocol.	All	Public Works, Road Operations Superintendent
	IL-04.B	Inspect for illicit connections and discharges during storm drain and cross- connection inspections. See MO-03	This is a requirement of Permit Sections E.9.b and E.9.c. Certified Unified Program Agency (CUPA) inspectors are trained to detect illicit discharges and follow reporting and follow-up guidance.	All	Public Health, Environmental Health Services Division, Supervising Environmental Health Specialist, and Hazardous Materials Section
	IL-04.C	Biennially train restaurant health inspectors in illicit discharge detection and elimination. Inspect 100% of restaurants annually. Assess need for additional preventive and/or corrective actions	This BMP is required by Permit Section E.7.b.1. The County's Environmental Health Department conducts annual employee training.	All	Public Health, Environmental Health Services Division, Supervising Environmental Health Specialist, and Hazardous Materials Section
	IL-04.D	Continue to train Certified Unified Program Agency (CUPA) inspectors in illicit discharge detection and elimination	Certified Unified Program Agency (CUPA) inspectors are trained to detect illicit discharges and follow reporting and follow-up guidance.	All	Public Health, Environmental Health Services Division, Supervising Environmental Health Specialist, and Hazardous Materials Section
	IL-04.E	Establish a system of tracking enforcement and penalties for illicit connections and discharges.	The County's Stormwater Enforcement Response Plan (2019) describes this protocol.	All	Public Health, Environmental Health Services Division, Supervising Environmental Health Specialist, and Hazardous Materials Section

Table B-1. Guidance Document / Permit BMP Cross-Reference Table, Continued

	Historic Guidance Doc BMP ID	Historic Guidance Document Measurable Goals and Outcomes	Current Implementation, as per the 2018 PEIAP	POC Addressed	County Implementers
	IL-06.A	Audit the adequacy of the operations and maintenance programs for County- operated wastewater treatment systems to ensure that these systems are properly operated and maintained to prevent sanitary sewer overflows and spills into the storm sewer system.	The County regularly audits wastewater facilities and processes through operational permits.	Pathogens, Nutrients	Public Works, Utilities Division
	IL-07.A	Identify and map Permit coverage area served by OWTSs including County-operated systems.	Septic and sewered areas are mapped and updated County-wide as part of Local Agency Management Program.	Pathogens, Nutrients	Department of Planning and Building Chief Building Official
	IL-07.B	Establish inspection/monitoring criteria for priority areas.	Septic inspections and monitoring criteria will be incorporated into the County's Local Agency Management Program.	Pathogens, Nutrients	Public Works for County-owned OWTS
	IL-7.C	Inspect 25% of the County-owned OWTSs in key areas per year.	The County continues to inspect County owned/operated septic systems.	Pathogens, Nutrients	Public Works for County-owned OWTS
	IL-7.D	Achieve 100% removal of OWTS discharges in areas of Los Osos subject to the Central Coast Board discharge prohibition.	All properties served by OWTS in the prohibition area have been connected to the new Los Osos Water Recycling Facility.	Pathogens, Nutrients	Public Works for County-owned OWTS
Municipal Operations	**MO-02.A**	MO2A: Sweep County roads with storm drains, curbs, and gutters in the Permit coverage area on quarterly basis or more frequently in heavily soiled areas.	Street sweeping frequency and effectiveness will be re-evaluated and revised per the Trash Amendment and Trash Implementation Plan.	Trash/Litter, Sediment	Public Works, Road Operations Superintendent
	MO-03.A	Implement Storm Sewer Inspection and Maintenance Procedures and Schedules	This BMP is required by Permit Sections E.11.f. and E.11.g. The County will continue to implement routine inspection and cleaning of the storm drain system.	Trash/Litter, Sediment	Public Works, Road Operations Superintendent
	MO-05.A	Maintain the County road and bridge inventory.	The County will continue to continually update the road and bridge inventory as infrastructure is built or repaired.	Sediment, Trash, Nutrients	Public Works, Road Operations Superintendent
	MO-05.B	Implement the road and bridge maintenance procedure manual.	The Road and Bridge Maintenance Procedure Manual was replaced with several specific Procedural Memorandums as part of the American Public Works Association accreditation program. These memorandums include maintenance and standard operating procedures. These procedural memorandums are actively implemented and are updated as needed, or every 3 years as part of the re-accreditation process.	Sediment, Trash, Nutrients	Public Works, Road Operations Superintendent
	MO-05.C	Train road and bridge maintenance employees to the manual.	The Road and Bridge Maintenance procedure manual was replaced with several specific Procedural Memorandums as part of the American Public Works Association accreditation program. These memorandums include maintenance and standard operating procedures. These procedural memorandums are actively implemented and are updated as needed, or every 3 years as part of the re-accreditation process.	Sediment, Trash, Nutrients	Public Works, Road Operations Superintendent
	MO-06.A	Use a self-inspection checklist to inspect County facilities (Golf Courses, Parks, Pools, Operations, Buildings, Vehicle and Equipment service and Fueling stations, construction sites, water and wastewater facilities and fleet and corporation/road yards in the Permit areas) for stormwater pollution prevention practices and procedures.	This BMP is required by Permit Sections E.11.a, E.11.b, and E.11.c. The County continues to conduct facility inspections and maintain checklists.	Sediment, Trash, Nutrients	County Parks, Central Services,
	MO-06.B	Inspect facilities annually at a minimum to ensure ongoing compliance.	This BMP is required by Permit Sections E.11.e.1. and E.11.c.ii. The County continues to perform facility inspections.	Sediment, Trash, Nutrients	Public Works

Table B-1. Guidance Document / Permit BMP Cross-Reference Table, Continued

	Historic Guidance Doc BMP ID	Historic Guidance Document Measurable Goals and Outcomes	Current Implementation, as per the 2018 PEIAP	POC Addressed	County Implementers
	MO-11.A	Audit County landscape and lawn care procedures and practices in permit coverage areas for stormwater pollution prevention including, but not limited to: the use of appropriate less toxic alternative products for pesticide and herbicide use, use of fertilizers, green waste disposal, irrigation practices, trash management and recycling practices, storage and maintenance of equipment, riparian corridor protection, and sustainable landscape design.	The County has established landscape and lawn care procedures and will review them for stormwater compliance per Permit Section E.11.j.	Nutrients, Pesticides, Oil/Grease, Litter, Sediment, Metals	Parks and Recreation Department
	MO-11.B	Revise procedures and retrain employees based on audit findings.	The County performs annual employee training, per Permit Section E.7.b.	Oil/Grease, Litter, Sediment, Metals	Parks and Recreation Department
	MO-11.C	Inspect for compliance during facility inspections described in BMP MO-06.	The County performs inspections and verifies compliance, per Permit Sections E.11.e.1. and E.11.c.ii.		Parks and Recreation Department
Construction	**CON-01.A**	Enforce Grading Ordinance for projects that disturb one acre or more of land to comply with the Permit and Construction Stormwater General Permit requirements.	The County enforces all ordinances, including grading ordinance and compliance with the Construction General Permit and all staff attend annual training, per Permit Section E.7.b.2.a.	Sediment	Department of Planning and Building, Chief Enforcement Official
	CON-03.A	Inspect construction sites >1 acre for stormwater BMPs to ensure that they are being implemented and properly maintained.	All permitted construction sites are inspected for erosion and sediment control and stormwater BMPs as part of County procedures.	All	Department of Planning and Building
	CON-04.A	Provide construction site education and outreach information with 100% of all construction Permit applications for projects with one acre or more of land disturbance in permit overage areas.	The County continues to provide construction site education and outreach information with 100% of Construction General Permit applications, per Permit Section E.7.b.2.b.ii.	All	Department of Planning and Building; Public Works, Development Services
Post-Construction	**PC-01.A**	Adopt and enforce *Resolution R3-2013-0032 Adopted July 12, 2013, Approving Post-Construction Stormwater Management Requirements for Development Projects in the Central Coast* (PCRs) in County Land Use Ordinance	The County is actively implementing the PCRs and annually reports the number of projects with PCRs.	N/A	Department of Planning and Building
	PC-04.A	Inspect project sites ≥1 acre for compliance with post-construction requirements defined in Section 22.52.110 of County Land Use Ordinance or in Section 23.02.040 of the Coastal Zone Land Use Ordinance. Inspections must include a check to verify that the post-construction runoff controls have been implemented and are being maintained in order to be compliant. Include post-construction stormwater management in site inspections and ongoing storm sewer system inspections. Include self-certification to ensure long- term maintenance of post-construction stormwater management controls.	The County is actively implementing the PCRs and annually reports the number of projects with PCRs.	N/A	Department of Planning and Building
	PC-13.B	Enact a strategy for implementing LID and hydromodification control for new and redevelopment projects. Provide appropriate education and outreach for all applicable target audiences. Provide specific guidance for LID BMP design and compliance with hydromodification control criteria. Apply LID principles and features to new and redevelopment projects.	The County will be revising its March 2017 *Stormwater LID Handbook* into an improved technical guide.	N/A	Planning and Building Staff

[1] The County's MS4 is subject to the requirements of California State Water Resources Control Board's (SWRCB's) Resolution 2015-0019, Amendment to the Water Quality Control Plan for Ocean Waters to Control Trash and Part 1 Trash Provisions of the Inland Surface Waters, Enclosed Bays and Estuaries of California (ISWEBE) Plan adopted on April 7, 2015, known as the Trash Amendments. Under the Trash Amendments, the County is required to install, operate, and maintain any combination of trash capture systems, multi-benefit projects, other treatment/institutional controls that trap all particles that are five millimeter or greater (specific to a design treatment capacity) within priority land use areas.

Appendix C

Baseline Quantification Tables

Morro Bay Wet Weather Watershed Baseline Load

Annual Precipitation (inch)[1]	22.4
Conversion from acre-in to 100ml	1027900
Convert to 10"12	1.00E+12

Land Use Name	Area[2] (acres)	% of Total Area	Runoff Coefficient[3]	Average Annual Runoff (100 ml)	Wet Weather EMC[4] (MPN/100ml)	Average Annual Load (10^12 MPN Fecal Coliform)	% of Total Load
Agriculture	31868	64.4%	20%	146,753,626,359	60,300	8849	83%
Commercial	240	0.5%	75%	4,151,694,764	791	3	0.03%
Industrial	0	0.0%	85%	0	26,703	0	0%
MF Residential	147	0.3%	70%	2,369,542,616	11,800	28	0.3%
Open Space	6604	13.4%	20%	30,409,795,072	6,310	192	2%
Public Facility	3403	6.9%	75%	58,764,300,233	2,148	126	1%
Recreation	1893	3.8%	20%	8,715,091,460	6,310	55	1%
Rural Residential	1838	3.7%	45%	19,039,721,015	6,684	127	1%
SF Residential	3139	6.3%	50%	36,139,869,419	35,557	1285	12%
Transportation	334	0.7%	87%	6,687,134,153	1,680	11	0.1%
Total Area	**49466**				**Total Load**	**10677**	

Morro Bay Wet Weather MS4 Baseline Load

Annual Precipitation (inch)[1]	22.4
Conversion from acre-in to 100ml	1027900
Convert to 10"12	1.00E+12

Land Use Name	Area[2] (acres)	% of Total Area	Runoff Coefficient[3]	Average Annual Runoff (100 ml)	Wet Weather EMC[4] (MPN/100ml)	Average Annual Load (10^12 MPN Fecal Coliform)	% of Total Load
Commercial	142	2.7%	75%	2,459,624,995	791	1.9	0.2%
Industrial	0	0.0%	85%	0	26,703	0.0	0%
MF Residential	128	2.4%	70%	2,064,648,822	11,800	24.4	2%
Public Facility	995	18.8%	75%	17,190,044,546	2,148	36.9	3%
Recreation	1029	19.4%	20%	4,738,949,142	6,310	29.9	2%
Rural Residential	189	3.6%	45%	1,960,531,570	6,684	13.1	1%
SF Residential	2730	51.5%	50%	31,423,646,307	35,557	1117.3	91%
Transportation	90	1.7%	87%	1,803,852,752	1,680	3.0	0.2%
Total Area	**5304**				**Total Load**	**1227**	

Morro Bay Dry Weather MS4 Baseline Load

Dry Weather Days[1]	328
Conversion from cf to 100ml	283.2
Convert to 10^12	1.00E+12

Land Use Name	Area[2] (acres)	% of Total Area	cf/day per developed acre[5]	Average Annual Runoff (100 ml)	Dry Weather EMC[6] (MPN/100ml)	Average Annual Load (10^12 MPN Fecal Coliform)	% of Total Load
Commercial	142	2.7%	11.3	149,439,392	106	0.02	2%
Industrial	0	0.0%	11.3	0	20	0.00	0%
MF Residential	128	2.4%	11.3	134,401,963	150	0.02	3%
Public Facility	995	18.8%	11.3	1,044,415,231	106	0.11	14%
Recreation	1029	19.4%	11.3	1,079,715,933	129	0.14	17%
Rural Residential	189	3.6%	11.3	198,526,636	167	0.03	4%
SF Residential	2730	51.5%	11.3	2,863,808,881	167	0.48	60%
Transportation	90	1.7%	11.3	94,479,870	41	0.00	0.5%
Total Area	**5304**				**Total Load**	**0.80**	

References

1. San Luis Obispo County Water Resources, Rain Gauge Station - Comm Shop # 224
2. San Luis Obispo County GIS Land Use information
3. County of San Luis Obispo, San Luis Obispo Creek Waterway Management Plan Vol. 3 Drainage Design Manual, February 2003.
4. Braun, C., Steets, B., Susilo, K., and Tesfamichael, A. 2011. Draft San Luis Rey Comprehensive Load Reduction Plan EMC memo. November 14, 2011.
5. IRWD and Orange County Metropolitan Water District (OCMWD). 2004. Residential Runoff Reduction Study. Irvine Ranch Water District and Municipal Water District of Orange County. July 2004.
6. Weston Solutions. 2009a. San Diego River Source Tracking Investigation – Phase I, Final Report Revision 1. Prepared for City of San Diego Storm Water Department. San Diego, CA. 132 pp.

Nipomo Creek Wet Weather Watershed Baseline Load

Annual Precipitation (inch)[1]	15.4
Conversion from acre-in to 100ml	1027900
Convert to 10"12	1.00E+12

Land Use Name	Area[2] (acres)	% of Total Area	Runoff Coefficient3	Average Annual Runoff (100 ml)	Wet Weather EMC[4] (MPN/100ml)	Average Annual Load (10^12 MPN Fecal Coliform)	% of Total Load
Agriculture	14,395	78%	20%	45,492,431,692	60,300	2743	89%
Commercial	318	1.7%	75%	3,769,785,382	791	3	0.1%
Industrial	14	0.1%	85%	183,416,184	26,703	5	0%
MF Residential	459	2.5%	70%	5,081,245,185	11,800	60	2%
Open Space	941	5.1%	20%	2,973,396,358	6,310	19	1%
Public Facility	0	0.0%	75%	0	2,148	0	0.0%
Recreation	3	0.0%	20%	10,831,681	6,310	0	0.0%
Rural Residential	1,250	6.8%	45%	8,889,095,117	6,684	59	2%
SF Residential	647	3.5%	50%	5,109,306,999	35,557	182	6%
Transportation	431	2.3%	87%	5,919,782,134	1,680	10	0.3%
Total Area	**18,458**				**Total Load**	**3,081**	

Nipomo Creek Wet Weather MS4 Baseline Load

Annual Precipitation (inch)[1]	15.4
Conversion from acre-in to 100ml	1027900
Convert to 10"12	1.00E+12

Land Use Name	Area[2] (acres)	% of Total Area	Runoff Coefficient3	Average Annual Runoff (100 ml)	Wet Weather EMC[4] (MPN/100ml)	Average Annual Load (10^12 MPN Fecal Coliform)	% of Total Load
Commercial	312	19.8%	75%	3,693,236,875	791	2.9	1.2%
Industrial	14	0.9%	85%	183,416,184	26,703	4.9	2%
MF Residential	460	29.2%	70%	5,085,314,146	11,800	60.0	23.9%
SF Residential	642	40.7%	50%	5,071,155,800	35,557	180.3	72%
Transportation	149	9.5%	87%	2,047,192,763	1,680	3.4	1%
Total Area	**1,576**				**Total Load**	**252**	

Nipomo Creek Dry Weather MS4 Baseline Load

Dry Weather Days[1]	329
Conversion from cf to 100ml	283.2
Convert to 10^12	1.00E+12

Land Use Name	Area[2] (acres)	% of Total Area	cf/day per developed acre[5]	Average Annual Runoff (100 mL)	Dry Weather EMC[6] (MPN/100mL)	Average Annual Load (10^12 MPN Fecal Coliform)	% of Total Load
Commercial	312	19.8%	11.3	328,170,174	106	0.03	15%
Industrial	14	0.9%	11.3	14,380,432	20	0.00	0.1%
MF Residential	460	29.2%	11.3	484,142,217	150	0.07	32%
SF Residential	642	40.7%	11.3	675,912,001	167	0.11	50%
Transportation	149	9.5%	11.3	156,816,838	41	0.01	3%
Total Area		**1,576**				**Total Load**	**0.23**

References

1. San Luis Obispo County Water Resources, Rain Gauge Station - CDF Nipomo # 151.1
2. San Luis Obispo County GIS Land Use information
3. County of San Luis Obispo, San Luis Obispo Creek Waterway Management Plan Vol. 3 Drainage Design Manual, February 2003.
4. Braun, C., Steets, B., Susilo, K., and Tesfamichael, A. 2011. Draft San Luis Rey Comprehensive Load Reduction Plan EMC memo. November 14, 2011.
5. IRWD and Orange County Metropolitan Water District (OCMWD). 2004. Residential Runoff Reduction Study. Irvine Ranch Water District and Municipal Water District of Orange County. July 2004.
6. Weston Solutions. 2009. San Diego River Source Tracking Investigation – Phase I, Final Report Revision 1. Prepared for City of San Diego Storm Water Department. San Diego, CA. 132 pp.

Appendix D

BMP Quantification Assessment Tables

Table D-1. Morro Bay Load Reduction Quantification

BMP Name	Wet or Dry Weather	Land Use Targeted	Pollutant Source	Quantification Assumptions			Quantification Method	Expected Annual Reduction of MS4 Baseline Load (10^12 MPN Fecal Coliform)	
				Load Assumption	Units	Citation/Assumptions		Low Range	High Range
Quantified BMPs									
Animal Facilities Management (Inspection, Enforcement, Education and Outreach)	Primarily Wet Weather	Commercial and Rural Residential	Livestock, equine facilities	Not sufficient data to quantify at this time					
Commercial/Industrial Inspections (Inspection, Enforcement, Outreach)	Dry Weather	Commercial	Dumpsters, outdoor garbage areas, garbage trucks, grease bins, outdoor dining/fast food, wash water	0.80	10 "12 Average MS4 FIB-FC dry-weather load in Watershed	Calculated based on dry weather flow and land use concentrations	(bacteria load) * (percent bacteria from runoff) * (percent of runoff from commercial activities) * (increase in inspection) * (expected behavior change)	**0.0011**	**0.011**
				5-10%	Percent of MS4 dry-weather flows (and fecal bacteria loads) from commercial runoff	Best Professional Judgment			
				15-27%	Percent of commercial runoff load generated from commercial activities	San Diego River Source ID study, 2009			
				25-50%	Percent of commercial area covered by increased inspection	Best Professional Judgment			
				75-100%	Percent reduction in bacteria loads from enhanced inspections	San Diego County JURMP			
Pet Waste Control and Pickup (Education and Control [Bags, Trash Receptacles])	Wet Weather	Primarily Parks, Recreational Areas and Residential	Pets	1,227	10 "12 Average MS4 FIB-FC wet-weather load in Watershed	Calculated by annual precipitation, land use runoff coefficients and land use FIB concentrations	(annual bacteria load) * (percent bacteria from canine sources) * (expected behavior change) * (percent of contributing area)	**5.5**	**82**
				10-20%	Percent of indicator bacteria having canine sources	Morro Bay DNA study			
				9 - 37%	Estimated behavior change	City of Austin, 2008; City of San Diego, 2010			
				50-90%	Percent of contributing area covered by program enhancements	Best Professional Judgment			
Water Conservation Inspections (Outreach and Education)	Dry Weather	Residential, Commercial, and Public Facilities	Irrigation runoff, fertilizers/compost, soil and decaying plant matter, green waste	0.80	10 "12 Average MS4 FIB-FC dry-weather load in Watershed	Calculated based on dry weather flow and land use concentrations	(bacteria load) * (percent bacteria from runoff) * (percent of runoff from irrigation) * (expected behavior change)	**0.024**	**0.1**
				50-80%	Percent of MS4 dry-weather flows (and fecal bacteria loads) from commercial and residential runoff	Best Professional Judgment			
				59-80%	Percent of commercial and residential runoff load generated residential and commercial from irrigation	San Diego River Source ID study, 2009			
				10-20%	Percent reduction in irrigation runoff from irrigation control incentives	Orange County irrigation runoff study, 2004			

Table D-1. Morro Bay Load Reduction Quantification (Continued)

BMP Name	Wet or Dry Weather	Land Use Targeted	Pollutant Source	Quantification Assumptions			Quantification Method	Expected Annual Reduction of MS4 Baseline Load (10^12 MPN Fecal Coliform)	
				Load Assumption	Units	Citation/Assumptions		Low Range	High Range
Quantified BMPs									
Dry-weather MS4 Inspection Program (Inspections, enforcement, outreach)	Primarily Winter Dry Weather	MS4 Conveyance System	Leaking sewers, illegal discharges, illicit connections, illegal dumping, RVs	0.80	10 ^12 Average MS4 FIB-FC dry-weather load in Watershed	Calculated based on dry weather flow and land use concentrations	(bacteria load) * (months of winter dry weather) / 12 * (percent bacteria from human sources) * (percent human contribution assumed from Illicit discharge sources) * (expected behavior change)	**0.001**	**0.025**
				5	Months during Winter dry weather				
				5-20%	Percent of dry-weather fecal bacteria having human sources	Estimate based on analysis of data for source tracking study in Oceanside, CA			
				50-75%	Percent human contribution from sewer discharge to MS4	Estimated based on the San Diego County Bacteria Source Prioritization Process			
				10-50%	Percent expected reduction from sewer discharge controls	Best Professional Judgment			
	Primarily Summer Dry Weather	MS4 Conveyance System	Leaking sewers, illegal discharges, illicit connections, illegal dumping, RVs	0.80	10 ^12 Average MS4 FIB-FC dry-weather load in Watershed	Calculated based on dry weather flow and land use concentrations	(bacteria load) * (months of summer dry weather) / 12 * (percent bacteria from human sources) * (percent human contribution assumed from Illicit discharge sources) * (expected behavior change)	**0.00023**	**0.018**
				7	Months during summer dry weather				
				1-10%	Percent of dry-weather fecal bacteria having human sources	Estimate based on analysis of data for source tracking study in Oceanside, CA			
				50-75%	Percent human contribution from sewer discharge to MS4	Estimated based on the San Diego County Bacteria Source Prioritization Process			
				10-50%	Percent expected reduction from sewer discharge controls	Best Professional Judgment			
Wet Weather Total							**Total expected load reduction**	**5.5**	**82**
							% of average MS4 total load	**0.5%**	**7%**
Dry Weather Total							**Total expected load reduction**	**0.026**	**0.15**
							% of average MS4 total load	**3.3%**	**19%**
Total								**6**	**82**

Table D-2. Nipomo Creek Load Reduction Quantification

BMP Name	Wet or Dry Weather	Land Use Targeted	Pollutant Source	Quantification Assumptions			Quantification Method	Expected Annual Reduction of MS4 Baseline Load (10^12 MPN Fecal Coliform)	
				Load Assumption	Units	Citation/Assumptions		Low Range	High Range
Additional BMPs									
Animal Facilities Management (Inspection, Enforcement, Education and Outreach)	Primarily Wet Weather	Commercial and Rural Residential	Livestock, manure	Not sufficient data to quantify at this time					
Commercial/Industrial Targeted Inspections (Inspection, enforcement, outreach)	Dry Weather	Commercial	Dumpsters, outdoor garbage areas, garbage trucks, grease bins, outdoor dining/fast food, wash water	0.23	10 "12 Average MS4 FIB-FC dry-weather load in Watershed	Calculated based on dry weather flow and land use concentrations	(bacteria load) * (percent bacteria from runoff) * (percent of runoff from commercial activities) * (increase in inspection) * (expected behavior change)	**0.00032**	**0.0031**
				5-10%	Percent of MS4 dry-weather flows (and fecal bacteria loads) from commercial runoff	Best Professional Judgment			
				15-27%	Percent of commercial runoff load generated from commercial activities	San Diego River Source ID study, 2009			
				25-50%	Percent of commercial area covered by increased inspection	Best Professional Judgment			
				75-100%	Percent reduction in bacteria loads from enhanced inspections	San Diego County JURMP			
Pet Waste Control and Pickup (Education and Control [Bags, Trash Receptacles])	Wet Weather	Primarily Parks, Recreational Areas and Residential	Pets	252	10 "12 Average MS4 FIB-FC wet-weather load in Watershed	Calculated by annual precipitation, land use runoff coefficients and land use FIB concentrations	(annual bacteria load) * (percent bacteria from canine sources) * (expected behavior change) * (percent of contributing area)	**1.1**	**17**
				10-20%	Percent of indicator bacteria having canine sources	Morro Bay DNA study			
				9 - 37%	Estimated behavior change	City of Austin, 2008; City of San Diego, 2010			
				50-90%	Percent of contributing area covered by program enhancements	Best Professional Judgment			
Water Conservation (Education and Outreach)	Dry Weather	Residential, Commercial, and Public Facilities	Irrigation runoff, fertilizers/compost, soil and decaying plant matter, green waste	0.23	10 "12 Average MS4 FIB-FC dry-weather load in Watershed	Calculated based on dry weather flow and land use concentrations	(bacteria load) * (percent bacteria from runoff) * (percent of runoff from irrigation) * (expected behavior change)	**0.007**	**0.029**
				50-80%	Percent of MS4 dry-weather flows (and fecal bacteria loads) from commercial and residential runoff	Best Professional Judgment			
				59-80%	Percent of commercial and residential runoff load generated residential and commercial from irrigation	San Diego River Source ID study, 2009			
				10-20%	Percent reduction in irrigation runoff from irrigation control incentives	Orange County irrigation runoff study, 2004			

Table D-2. Nipomo Creek Load Reduction Quantification (Continued)

BMP Name	Wet or Dry Weather	Land Use Targeted	Pollutant Source	Quantification Assumptions			Quantification Method	Expected Annual Reduction of MS4 Baseline Load (10^12 MPN Fecal Coliform)	
				Load Assumption	Units	Citation/Assumptions		Low Range	High Range
Additional BMPs									
Dry-weather MS4 Inspection Program (Inspections, enforcements, outreach)	Primarily Winter Dry Weather	MS4 Conveyance System	Leaking sewers, illegal discharges, illicit connections, illegal dumping, RVs	0.23	10 ^12 Average MS4 FIB-FC dry-weather load in Watershed	Calculated based on dry weather flow and land use concentrations	(bacteria load) * (months of winter dry weather) / 12 * (percent bacteria from human sources) * (percent human contribution assumed from Illicit discharge sources) * (expected behavior change)	**0.00024**	**0.0071**
				5	Months during Winter dry weather				
				5-20%	Percent of dry-weather fecal bacteria having human sources	Estimate based on analysis of data for source tracking study in Oceanside, CA			
				50-75%	Percent human contribution from sewer discharge to MS4	Estimated based on the San Diego County Bacteria Source Prioritization Process			
				10-50%	Percent expected reduction from sewer discharge controls	Best Professional Judgment			
	Primarily Summer Dry Weather	MS4 Conveyance System	Leaking sewers, illegal discharges, illicit connections, illegal dumping, RVs	0.23	10 ^12 Average MS4 FIB-FC dry-weather load in Watershed	Calculated based on dry weather flow and land use concentrations	(bacteria load) * (months of summer dry weather) / 12 * (percent bacteria from human sources) * (percent human contribution assumed from Illicit discharge sources) * (expected behavior change)	**0.000066**	**0.0050**
				7	Months during Summer dry weather				
				1-10%	Percent of dry-weather fecal bacteria having human sources	Estimate based on analysis of data for source tracking study in Oceanside, CA			
				50-75%	Percent human contribution from sewer discharge to MS4	Estimated based on the San Diego County Bacteria Source Prioritization Process			
				10-50%	Percent expected reduction from sewer discharge controls	Best Professional Judgment			
Encampment Management	Wet and Dry Weather	Commercial and Residential	Human waste and trash	Not sufficient data to quantify at this time					
Wet Weather Total							**Total expected load reduction**	**1.1**	**17**
							% of average MS4 total load	**0.44%**	**6.8%**
Dry Weather Total							**Total expected load reduction**	**0.0073**	**0.044**
							% of average MS4 total load	**3.2%**	**19%**
Total								**1.1**	**17**